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Railway Age

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Vol. 89 July 5, 1930 No. 1

In this Issue

Rebuilding a Nation's Railways ..... Page 4

Charles Layng, transportation editor, *Railway Age*, describes the methods used and the successful results obtained by the Deutsche Reichsbahn-Gesellschaft in completely reorganizing its 33,000-mile system.

Grand Trunk Beautifies With Flowers 11

How the Grand Trunk Western enhances the attractiveness of 80 of its passenger and freight stations by artistic use of well-maintained flower beds.

An Englishman Looks at Railways of the United States 23

R. Bell, assistant general manager of the London & North Eastern, in comparing governmental influence on transport in both countries, concludes that English conditions are preferable.

EDITORIALS

The Battle on Two Fronts 1
Continued Savings in Operating Expense 2
Remarkable Accident Record 2
No Injury to Stock Sales Plans from Market Slump 3
Air Transport Lines Raise Their Rates 3

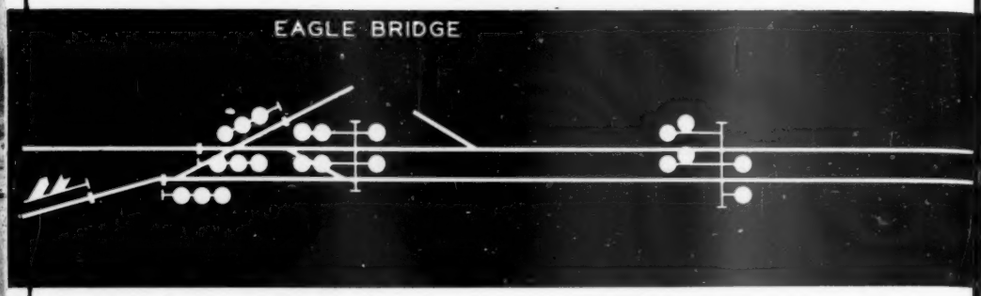
GENERAL ARTICLES

Rebuilding a Nation's Railways, by Charles Layng 4
Freight Car Loading 7
A. S. T. M. Holds Annual Meeting 8
Grand Trunk Beautifies With Flowers 11
A. I. E. E. Holds Transportation Meeting 12
A. E. R. A. Report on Heavy Electric Traction 13
Chicago to San Francisco in Twenty Hours, by P. G. Johnson 14
Territorial Variation in Cost of Service, by M. O. Lorenz 17
System in the Division Office, by Clell G. Cannon 21
An Englishman Looks at Railways of the United States, by R. Bell 23
Accidents Investigated During October 26
A Twin-Fan Unit Heater 28
Railroad Presidents Testify on "Reciprocity" at Chicago 29

COMMUNICATIONS AND BOOKS 34
LOOKING BACKWARD 35
ODDS AND ENDS OF RAILROADING 36
NEWS OF THE WEEK 37

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

Through At Junction



THERE are two junction points on this section, one with the Rutland Railroad at Hoosick Jct. and another with the Delaware and Hudson at Eagle Bridge. As many as 60 trains daily were moved over this territory and considerable expensive delay was occasioned at these junctions where there were hand-throw switches. Both tracks, from Eagle Bridge to Hoosick Junction, have been signaled for two-direction running.

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Railway Age

Vol. 89, No. 1 July 5, 1930 Table of Contents Appears on Page 5 of Advertising Section

The Battle on Two Fronts

THE present situation of the railways, when very poor net operating income is being reported during a period of depression, strongly emphasizes the force of certain statements made by L. A. Downs, president of the Illinois Central, in an address delivered at the dinner of the Railway Business Association last November. "Do what you can," said Mr. Downs, "to help increase operating efficiency; do what you can to help resist declines in the rate-bearing ability of traffic. The battle must be fought on two fronts, and it can be won or lost on either."

Net operating income, which is the difference between total earnings on the one hand, and operating expenses and taxes on the other, is the life blood of the railroad or any other industry. Total earnings depend upon the volume of traffic and the rates applied to it. Whether the traffic can bear rates which will produce adequate total earnings depends upon the volume of traffic. If the volume of traffic is ample, the rates required to produce adequate total earnings will be lower than if the volume of traffic is smaller. On the other hand, if the volume of traffic is comparatively small, it does not follow that a general advance in rates will increase total earnings, because an advance in rates may drive some traffic away. If total earnings are inadequate, it does not follow that net operating income can be made sufficient merely by reducing operating expenses. Operating expenses can be reduced in such ways as to impair the condition of railway properties with the ultimate result of causing increases in expenses that will lead to bankruptcy. In the long run the only real economies are those that are secured by an increase in efficiency in the use of labor, materials and fuel.

For some years the railways have been carrying on a different kind of fight on the front that protects their earnings from any they have ever had to carry on before. For about nine-tenths of their history of one hundred years they fought on that front solely to prevent undue reduction of their rates. This was their danger on that front when they were actively engaged in competition with each other before they were subject to regulation. It was their danger during the earlier years of regulation. Almost throughout their history their traffic grew so rapidly that its increasing volume together with increased operating efficiency, enabled them to stand both increases in their wages and other unit costs of operation, and reductions of their rates.

The situation in this respect has changed greatly within recent years. Their losses of passenger business and decline in the growth of their freight business have rendered it impossible to maintain, much less increase, their total earnings even during a period when their rates have been maintained better than during most of their previous history. During the most of their history the tendency of traffic constantly and largely to increase was their protection from the effects of competition between themselves and all other influences which tended to reduce their ability to make adequate net earnings. By the same token, the change in the trend of the volume of their traffic has now become the most serious menace to them in both good and bad years. It was the principal thing that prevented them in the active business year of 1929 from earning anything approaching a satisfactory net return. It is the principal thing which, in the present year of depression, is causing them to earn such a comparatively small net operating income.

Operating Economies Insufficient

As long as the trend of their traffic continues to be what it has been within recent years the only means they have available for maintaining net operating income is reduction of operating expenses. They have enormously reduced their operating expenses by increasing their operating efficiency; but, to a substantial degree, the effects that otherwise would have been produced upon their operating expenses have been nullified by constant increases in taxes and in average wages. As a result, during the present depression they are finally being forced not only to operate as efficiently as practicable, but to make retrenchments which, in the long run, will not be in the interest either of operating economy or good service.

There is thus presented a problem of very great difficulty. After referring to the present business depression in his recent address before the Purchases and Stores division in Atlantic City, R. H. Aishton,

president of the American Railway Association, said: "While the present traffic of the railways is a matter of concern, the great question of the railways is: What will traffic be when business becomes normal again?" Will the government continue to so aid other means of transportation that they will be able to take an increasing amount of traffic from the railways? Will the railways be allowed and able to so utilize airways, highways and waterways as to make up for the traffic diverted from their rails? Will the traffic remaining on the rails be able to stand rates that will produce adequate earnings, and if so, will these rates be allowed to be charged?

On the other hand, if the general tendency of total railway earnings is to be downward, will it be possible to keep down wages and taxes and increase operating efficiency enough to offset this tendency? Already the leaders of the railway labor organizations are announcing demands for reductions of working hours, with corresponding increases in hourly wages, the effect of which would be to nullify increased operating efficiency and increase operating expenses. Furthermore, the general tendency of taxes is upward, regardless of the tendencies of total net earnings and net operating income.

Railways Cannot Win Fight Alone

It is always well to be optimistic, but optimism should be based on facts. The facts show that, as Mr. Downs said, the railways are confronted with a battle which must be fought on two fronts. They must fight to maintain their traffic, as well as their rates, and they must fight to effect economies, not only through increased efficiency but through resistance to the constant demands for higher wages and taxes. Railway managements cannot fight this battle to a successful issue without assistance. The influences that are affecting the growth of traffic are also affecting their ability to give employment, and, wholly regardless of other matters regarding which the railways and their employees may disagree, employees, for the protection of their own jobs, should make an organized effort to arrest the tendency of the government to so aid other means of transportation as to divert traffic from the railways. Likewise, the railways should have the assistance of the organized business of the country in resisting the influences whether originating with governmental or other sources, that tend both to reduce railway earnings and increase railway costs. It is clearly contrary to the welfare of general business to have railway service impaired, but although the railways are now rendering the best service in history the danger of serious impairment of their service is obvious.

Almost all classes of the business men of the country now have troubles of their own, and it is therefore not a very good time to get them to take an interest in the railway situation. Nevertheless, if the battle on two fronts is to be won, real fighting on behalf of the railways cannot be begun too soon.

Continued Savings in Operating Expense

LAST autumn, in line with a policy being followed by numerous carriers, a certain railroad made a reduction in forces for the purpose of curtailing operating expenses in anticipation of a slump in traffic. At the same time, it also undertook studies designed to improve its methods of operation in ways which would effect further savings in operating expenses. One of these investigations showed that a marked reduction in operating costs could be effected by the installation of automatic block signals and remotely-controlled power switches on a certain division, and the installation of this equipment is being rushed to early completion.

In like manner, a neighboring carrier is now proceeding to install automatic signals on 120 miles of road, while a third line which completed the installation of retarders in a classification yard last November, is now effecting a saving in operating expenses in the yard sufficient to pay a return of 40 per cent on the cost of the improvement. These projects are excellent examples of ways in which the more progressive railways are now spending money to save money. The really important feature of improvements of this character is the fact that the reductions in operating expenses on the basis of which the expenditures are authorized, will continue, not alone during the coming months, but indefinitely through the years.

Remarkable Accident Record

SOME very remarkable figures illustrating the way in which accidents on railways have been reduced, and in consequence the safety of employees, passengers and the public have been increased, were given in a recent address by A. G. Pack, chief inspector of locomotives of the Interstate Commerce Commission. The statistics related to accidents resulting from the failure of some part or appurtenance of locomotives, but they are an indication of the improvement that has been made in all parts of the railway plant and in all kinds of operating methods.

Mr. Pack's figures were for years ending June 30. They showed that between 1923 and 1929 the percentage of all locomotives inspected by his department that were found defective in any way declined from 65 to 21 and for nine months of the year ended June 30, 1930, showed a corresponding improvement. The number of locomotives ordered out of service because of defects declined from 7,075 in 1923 to 1,490 in 1929, or 79 per cent. The number of locomotive accidents decreased from 1,348 to 356, or 74 per cent. The number of persons killed due to these accidents decreased from 72 to 19, or 74 per cent. The number of persons injured decreased from 1,560 to 390, or 75 per cent. In the

meantime, the average speed at which freight trains were operated increased from 10.6 miles to 13 miles an hour, or 23 per cent.

"This substantial improvement has undoubtedly been brought about," said Mr. Pack, "by great improvement in locomotive construction, equipment, inspection and repair, and is due to the fact that railroad officers are showing greater interest in such matters than ever before, with the result that locomotives are being maintained in better condition, all of which is in the interest of greater safety to the public and employees, as well as efficiency and economy in operation."

Mr. Pack might have said, without immodesty on his part, that the improvement has been due not only to the things he mentioned, but also to co-operation between the government department he represents and railway managements. There is often complaint, much of which is just, of undue government interference, but the locomotive inspection department of the commission has found that the best results are secured by close co-operation between the regulating authority and those on whom regulation is imposed and the statistics given are sufficient proof of the results that have been obtained by the policy followed.

No Injury to Stock Sales Plans from Market Slump

"EMPLOYEE stock subscription plans, under which employees may purchase the stock of the company for which they work, not only did not suffer any set-back as a result of the stock market crisis of 1929, but emerged from that severe test strengthened and enjoying increased confidence on the part of employee stock owners"—thus the National Industrial Conference Board summarizes the results of an investigation of the working of 315 such plans.

In only a few scattered instances was any dissatisfaction expressed with the plans in effect. An important element of strength in most of them, the Board discovered, was the fact that stock was sold at prices substantially below those obtaining in the market during its rapid rise last year. Thus, generally speaking, employees avoided the losses which the stock market decline entailed. Nor was any tendency shown to sacrifice stocks following the market upheaval—rather, on the whole, employee-owners in need of funds gave up savings bank accounts rather than sell the stock of their companies.

Additional testimony on the efficacy of a soundly-conceived stock sales plan has just come from the Pennsylvania. This company offered 360,000 shares of stock to officers and employees in the Spring just past and the offering was oversubscribed by 60 per cent

Apparently, if a company is sound financially and will plan its stock sales policy carefully, and liberally, there need be no fear from even as bad a market upset as that which we have gone through in the past few months. A plan sufficiently well conceived to weather this gale is worthy of the utmost confidence.

Air Transport Lines Raise Their Rates

A SENSIBLE step has been taken by a number of the principal passenger carrying air lines. This is the establishment of the basic rate for the transportation of passengers at seven cents a mile. Until about six months ago, the rate level applying on most of the passenger air lines was in the neighborhood of ten cents a mile. So long as this rate was in effect, little business could be secured. Around the first of the year, the daily departure of almost empty airplanes so alarmed the managements of the air lines that many of them cut their rates drastically to the point where they approximated five cents a mile and in many instances were exactly equal to the railroad rate plus Pullman fares in effect between the points served by these air lines. These rate reductions worked wonders in increasing the business of the air lines, but they apparently had little or no effect in stopping the flow of red ink in their accounting departments. The recent establishment of a rate of seven cents a mile is an attempt to strike a happy medium between a high rate, which only a few passengers will pay, and a low rate, which many will pay but which is insufficient to permit operations to be carried on at a profit.

This increase in the fares charged by the air lines seems to be entirely justified. From a theoretical standpoint, air travel should be more expensive than railway travel on account of its substantially greater speed. From a practical standpoint, also, the charges for air transportation should be higher since experience has shown that under present conditions and with the available equipment, even capacity loads at railroad fares will not pay operating expenses. Perhaps even the rate of seven cents a mile now charged by a number of the leading air lines will prove to be inadequate; their experiences during the next few months should provide the answer to that question.

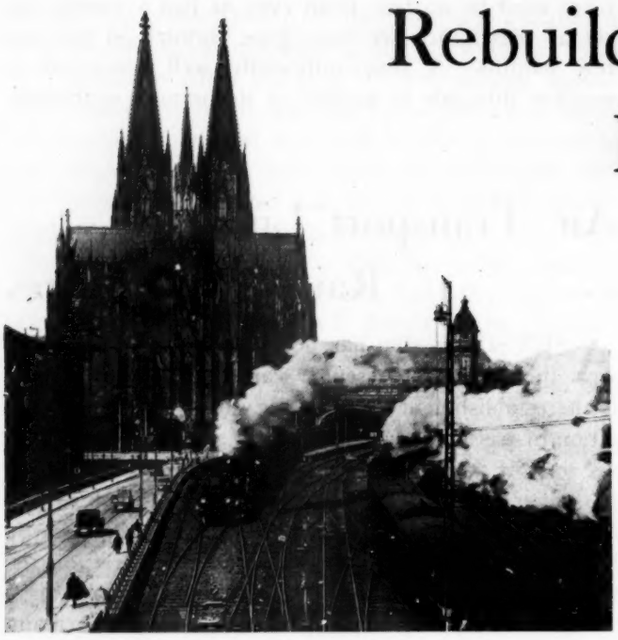
The effect of the increase in passenger fares on the air lines is to set up four classes of travel in this country, with four levels of rates proportionate to the four rates of speed offered. Motor-coach travel generally is the slowest and the cheapest, while railway day-coach travel is next slowest and next cheapest. Faster service at higher rates is offered in Pullman accommodations on limited trains, while the fastest service of all at the highest rates is provided by the air lines. In their relation to each other, at least, the fares charged for transportation by the various carriers appear now to be on a sound basis.

Rebuilding a Nation's Railways

Germany tackles a gigantic task and is rapidly achieving success

By Charles Layng

Transportation Editor, *Railway Age*



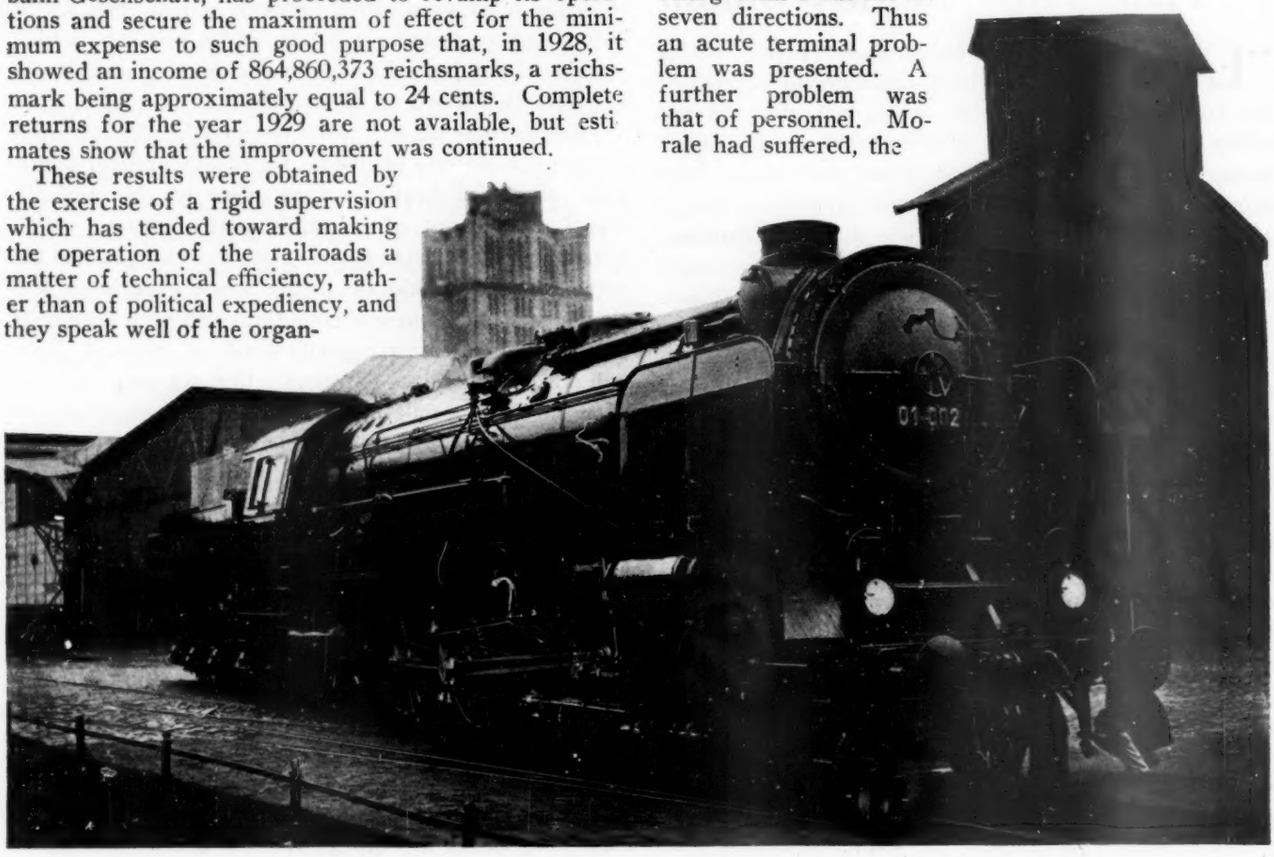
Approaching Passenger Station at Cologne

IN 1924, the government-owned railways of Germany were turned over to quasi-private control. The condition of the lines then could hardly be termed anything but chaotic, and the new company was saddled with an enormous debt. Despite all the handicaps placed upon it, the new company, the Deutsche Reichsbahn-Gesellschaft, has proceeded to revamp its operations and secure the maximum of effect for the minimum expense to such good purpose that, in 1928, it showed an income of 864,860,373 reichsmarks, a reichsmark being approximately equal to 24 cents. Complete returns for the year 1929 are not available, but estimates show that the improvement was continued.

These results were obtained by the exercise of a rigid supervision which has tended toward making the operation of the railroads a matter of technical efficiency, rather than of political expediency, and they speak well of the organizing and recuperative powers of the German people.

Originally, the railways of Germany consisted of some 15 or 16 state-owned lines, such as the Prussian, Bavarian, and Saxon state railways, etc. Some years before the war, however, they were placed under the control of the central government, in whose hands they remained until 1924.

As at present constituted, the new company operates 33,541 miles of line, including a few hundred miles of narrow gage. Of the standard gage track 18,970 miles is main line and 13,986 miles is branch line, all of the main line, and a considerable portion of the branch line being double-track. Germany being relatively small in area as compared to the United States, this means that the country is covered with a network of lines, with junction points every few miles, and many large terminals, with main lines entering them from six or seven directions. Thus an acute terminal problem was presented. A further problem was that of personnel. Morale had suffered, the



One of the New Passenger Locomotives

lines were overstaffed and many employees owed their positions to political influence. Germany was required to turn over large numbers of cars and locomotives to the Allies under the reparations plan, thus creating an equipment shortage. The manner in which these and other problems are being worked out by the present management, once the incubus of political control was removed, is most interesting.

The Employees

One of the immediate duties faced by the new management was a reduction in the number of employees. An immediate cut was made, but, before a further reduction could be made, efficiency had to be improved. By the end of 1925, the total number of employees was 732,961, and this has been reduced each year since until, at the last report, it stood at 700,663. In the same period, the number of officers was reduced from 331,712 to 310,597 and the number of workmen from 401,249 to 390,066. In this connection, it should be understood that the German railways list as officers such employees as yardmasters, station agents, clerks, trainmen, enginemen and foremen.

The wages received by the various classes afford an interesting comparison by our standards, as shown by the following list of annual salaries of employees paid by the month:

Title	*Average Annual Salary*
Superintendent	$2,290
Foreman	1,371
Engineman	1,090
Clerk	865
Fireman	853
Trainman (incl. conductors)	801

The workmen are divided into three classes. The craftsmen average 26 cents an hour, the skilled workmen, 20 cents an hour, and the unskilled workmen, 17 cents an hour.

Rapid strides have been made in the education and improvement of the morale of the employees, one of the prime contributing features being the assurance now to be had that promotion will take place on the basis of seniority and efficiency, rather than political "pull."

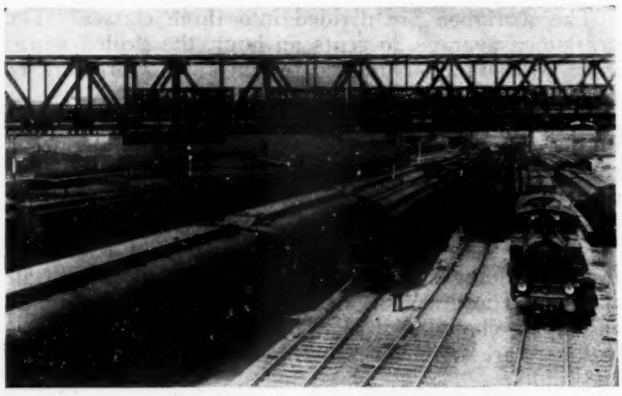
Schools have been established throughout Germany for the training of prospective railway employees of all classes. These schools are remarkably well equipped and are in charge of a high grade of instructors. Probationers are selected from among the more likely high and middle school students, and they serve as apprentices, not merely in the mechanical department, as in the United States, but in all departments, including clerical and accounting. A systematic collaboration is in effect between the railway's educational department and the public and technical schools. Professors of engineering and transportation in outside technical schools are given opportunities to keep abreast of the times by a continuing series of lectures by practical railway officers.

The Passenger Car Yard at Leipzig

A rapidly growing department is that on psycho-technical research. Insofar as possible, each candidate for employment in the skilled grades is given a psycho-technical examination and advised as to his choice of career.

The new company has continued the policy of erecting dwellings or aiding employees in the erection of dwellings. Since 1920, 65,492 such dwellings have been erected, of which 28,992 are owned by the company, and 36,500 subsidized.

The shortage of equipment made it necessary to get the maximum utilization from existing equipment, and



Passenger Car Yard, Potsdam Station, Berlin

the most efficient way of doing this was to increase the speed with which cars moved through the freight terminals. This was accomplished by an increased supervision of the movement of cars through terminals, and an increase in the amount of gravity switching. This latter consisted of building a number of new gravity yards, including a number of new mechanical yards, equipped with car retarders and other mechanical aids to rapid classification.

Since 1925, three new mechanical yards have been established at Hamm, Duisburg-Hochfeld, and at Bremen. Hamm is at the east end of the intensely industrialized Ruhr district, and Duisburg-Hochfeld at the west end, while Bremen is an extremely large seaport. A detailed description of the yard at Hamm, with an analysis of the results obtained, will be published in an early issue. However, it may be stated here that, upon occasion, cars go over the hump at Hamm at the rate of nine a minute, and, in one 24-hr. period, 6,748 cars have gone over the hump, with the cuts averaging only 1.3 cars.

These yards, built at the three largest terminals, have materially relieved congestion at these crucial points. Their operation has been so successful that their features of design and operation have recently been incorporated in three other European yards, one at Mutenzerfeld, Switzerland, another at Milan, Italy, and a third at Whitemoor, England.

Further terminal relief has been effected by the operation of "main-trackers." These are run through, without classification enroute, from, for example, the sources of raw material to the industrial districts. In these services, cars up to 50 and 60 tons capacity are used, which cannot be used in general freight service, for the reason that German freight cars are constantly crossing frontiers into other countries, where the railways are not equipped to handle this size of car.

Switching at stations and to industry tracks has also undergone a drastic revision and improvement. Here again, the removal of railways from politics has had a good effect. Cars are now placed on industry tracks on the basis of priority of application, which was not always the case under government control.

Reducing the Equipment Shortage

Lack of money for the purchase of new equipment on any large scale has handicapped the new administration. But, by improvement in operating efficiency and by weeding out obsolete equipment, the problem is approaching a solution.

The total number of freight cars in service in 1925 was 774,470, while, at the last report, only 756,009 cars were in service. Despite the reduction of 18,361 cars, and an increase in annual revenue car loadings from 37,841,221 to 45,974,988 in the same period, operating efficiency, particularly terminal improvement, has produced a good showing. In 1926, the car shortage was particularly acute, amounting to 487,747 cars in all, which has now been reduced to a shortage of 81,624 cars.

This is paralleled by improved locomotive performance. The number of locomotives in serviceable condition now averages 85 per cent of the total, as compared with 77 per cent in 1925, while the average daily revenue mileage per locomotive has been increased from 14.8 miles per day to 20.3 miles per day.

Passenger Service

The same agencies of competition to railway passenger traffic exist in Germany as in the United States, and even more acutely, since there is a greater proportion of short-haul traffic, and since the passenger air lines are far more developed. Nevertheless, by increased efficiency of operation, and by an intensive sales campaign, the net earnings from passenger traffic have been showing steady increases since 1925. One of the important reasons for this was the elimination, in 1928, of the system of having four separate classes on practically every train. Fourth class travel has now been entirely eliminated, as has first class on all but the important through trains running between Germany and other countries.

Second-class, as at present constituted, consists of comfortable compartments, seating six people in neatly upholstered seats, while third-class compartments hold eight people and the seats are not upholstered. For both classes, the most scrupulous cleanliness is a noticeable feature. This practical elimination of two classes has, of course, resulted in a much greater utilization of passenger cars, which formerly ran with practically empty first and third class compartments and crowded second and fourth class.

The resulting efficiency is clearly indicated by the fact that, while the number of passengers carried annually has decreased nearly one hundred million since 1925, and the average journey has remained the same, 14.7 miles, the income from passenger traffic has increased nearly ten million dollars.

Another important factor has been the efforts to increase the number of passengers using the higher revenue classes. The railroad has issued booklets in seven

Interior of Friedrichstrasse Station, Berlin

languages for distribution in 12 countries, including the United States, setting forth the desirability of Germany as a tourist center and has used many channels of publicity to convey this message.

Luxurious trains have been established to take care of this high-class traffic in Germany. The Rhinegold Express is an excellent example of this. The large traffic between England and the Alps of Switzerland is highly competitive, there being almost an unlimited number of routes, through different countries, by which the traveler may go. To attract the traffic to the German railways, the "Rhinegold" was established. This train leaves the Hook of Holland early in the morning, goes up the Rhine valley and puts the traveler in Switzerland at night, making the run of 510 miles in 11 hr. 30 min., or 44 miles an hour, including 11 stops. This train is luxuriously equipped. Among other things, excellent meals are served to each passenger in his chair, without the necessity of going into a dining car.

The interest being taken in Germany's revived and efficient railway operation is indicated by the number of foreign railway officers visiting and inspecting the lines. In 1929, for example, 162 railway officers from the United States made inspection trips over various parts of the German railways. Much of this interest centers in the excellent results being obtained under private management by comparison with the former regime.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading continued to decline in the week ending June 21, when it amounted to 920,859 cars, or less than the loading for any week in May except that which included the Memorial Day holiday. This was a reduction of 149,015 cars as compared with the corresponding week of last year and of 66,501 cars as compared with 1928. All classes of commodities participated in the decrease as compared with last year, but a large part of it was in the loading of miscellaneous freight, which decreased 65,451 cars. All districts except the Southwestern showed decreases as compared with both years but it showed a slight increase as compared with 1928. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, June 21, 1930

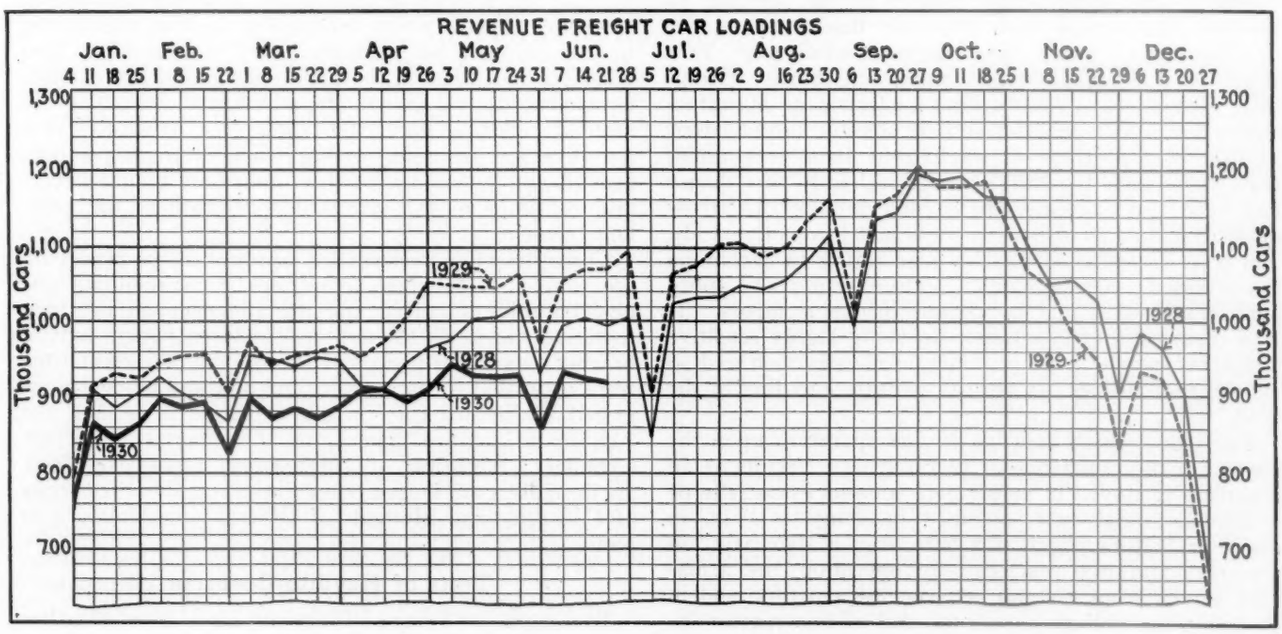
Districts	1930	1929	1928
Eastern	205,444	245,583	225,914
Allegheny	189,189	223,801	204,565
Pocahontas	51,777	58,611	53,062
Southern	123,497	143,029	140,627
Northwestern	149,052	173,006	157,151
Central Western	129,894	145,858	134,484
Southwestern	72,006	79,986	71,557
Total Western Districts	350,952	398,850	363,192
Total All Roads	920,859	1,069,874	987,360
Commodities			
Grain and Grain Products	39,694	45,327	33,397
Live Stock	21,331	23,353	24,380
Coal	132,505	153,653	144,887
Coke	9,334	12,093	9,397
Forest Products	49,637	70,903	67,312
Ore	63,193	75,432	65,525
Merchandise L.C.L.	240,879	259,376	256,466
Miscellaneous	364,286	429,737	385,996
June 21	920,859	1,069,874	987,360
June 14	926,093	1,069,670	1,002,813
June 7	935,647	1,055,768	995,570
May 31	860,249	972,825	934,673
May 24	931,472	1,062,088	1,021,403
Cumulative total, 25 weeks	22,272,119	24,521,959	23,458,074

The freight car surplus for the week ended June 14 averaged 462,079 cars, an increase of 7,332 cars as compared with the week before. This included 250,481 box cars, 154,901 coal cars, 29,057 stock cars and 14,234 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended June 21 totalled 63,830 cars, a decrease from the previous week of 779 cars and a decrease of 11,429 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
June 21, 1930	63,830	30,918
June 14, 1930	64,609	31,514
June 7, 1930	66,487	31,162
June 22, 1929	75,259	40,034
Cumulative Totals for Canada		
June 21, 1930	1,465,655	892,404
June 22, 1929	1,632,379	1,067,928
June 23, 1928	1,595,100	986,941



A. S. T. M. Holds Annual Meeting

Many subjects of interest to railway men, relating to material specifications and tests, are discussed— New strain gage demonstrated

THE thirty-third annual meeting of the American Society for Testing Materials was held at the Chalfonte-Haddon Hall, Atlantic City, N. J., June 23 to 27, with an attendance of 1093 members and guests, the largest in the history of the society.

Sixteen general sessions were held for the formal presentation of papers and committee reports, but in accordance with the custom of the society, a large part of the individual committee work and business of the meeting was conducted in special committee meetings.

Altogether, about 100 papers and reports were presented at the general sessions, which were, for the most part, presided over by President T. D. Lynch, consulting metallurgical engineer, Westinghouse Electric & Manufacturing Company. K. G. Mackenzie, consulting chemist of the Texas Company, New York City, was elected president for the coming year, while Cloyd M. Chapman, consulting engineer, New York City, was elected vice president. The Edgar Marburg Lecture, a regular feature of the society's meetings, was made by Dr. C. E. Kenneth Mees, director of research and development, Eastman Kodak Company, on the subject of Color and its Measurement. The fourth award of the Charles B. Dudley medal was made jointly to J. R. Townsend of the Bell Telephone Laboratories, Inc.; W. A. Straw, development engineer of the Western Electric Company, Inc.; and C. H. Davis, assistant metallurgist of the American Brass Company.

New Strain Gage Described

One of the outstanding features of the meeting of interest to railroad men was the disclosure of the development of a new type magnetic strain gage, in a paper by J. P. Shamberger, engineer, Railway Equipment department, Westinghouse Electric & Manufacturing Co. With this device it is possible to determine accurately the stress in mechanical structures under both static and dynamic loading. Already this device has been used successfully in determining the stress under dynamic conditions in rails and locomotive rods, and tests are planned for the near future to determine the stresses under dynamic conditions in track splice bars, track bolts, and in various bridge members. It was reported that in addition to being highly sensitive and accurate, the gage is simple in construction and so rugged that it does not require delicate handling in the field.

The gage, which depends for its operation upon the change in the reluctance of two magnetic circuits as an armature is moved in an air gap, consists essentially of a tubular metal case, about 8 in. long by 1 in. in diameter, within which is a base arm, a slide arm, an armature and two reactors. In operation, the armature moves in an air gap between the reactors, and in so doing, the voltage across the coil of one reactor increases while that across the other reactor decreases. It is this change in voltage which is recorded. The gage is readily attached to the specimen being tested, and is not encumbered with any of the recording instruments used with it, which are kept to one side and joined to the gage through electric circuits. The principal recording instrument used with the gage in dynamic testing is an oscillograph, which makes a film record of the strain measured. In static testing, a direct-current milliammeter may be substituted for the oscillograph.

Typical oscillograph records were shown of conditions produced in a 130-lb. rail on a 10-deg. curve, by the movement of an electric locomotive over it, and explanation was made of how it was possible to determine from the record the vertical and lateral forces acting on the rail.

Many Reports on Cement and Concrete

Thirteen committees presented reports on cement, concrete and allied subjects these including Committees on Cement, Tests on Portland Cements and Early High-Strength Cements, Strength and Resistance to Sulfate Waters of Concrete Cured in Water Vapor; Reinforced Concrete; Concrete Aggregates; Workability of Concrete; Plain and Reinforced Haydite Concrete; and Variations in the Compressive Strength of Concrete Within the Water-Cement Ratio Law.

Committee C-1 on Cement presented the results of a questionnaire on the characteristics of masonry cements and a report on the first year of work of the Cement Reference Laboratory, operated jointly by the committee and the Bureau of Standards, with the purpose of affording a place where equipment used in the testing of cement can be calibrated and standardized, and where instructions on the maintenance and use of such equipment can be given. In addition to several other matters reported upon, the committee presented new tentative specifications for high early-strength portland cement and recommended for immediate adoption certain revisions in the standard specifications for portland cement.

Committee C-9 presented a comprehensive report on the subject of concrete aggregates, recommending one new tentative standard and the advancement of three tentative standards to standard. Eleven papers having bearing on various phases of the work of the committee were appended to its report, four of these being: Suggested Procedure for Testing Concrete in Which the Aggregate is More than ¼ the Diameter of the Test Cylinders; Abrasion of Aggregates; One-Year Tests on the Effect of Dust-Coated Stone on the Properties of Concrete; and Methods of Determining Moisture in Sand.

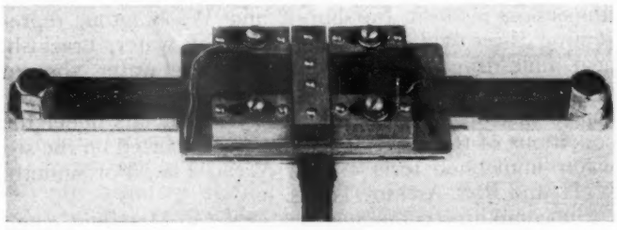
Tests of Haydite Concrete

In a paper on Tests of Plain and Reinforced Haydite Concrete, by F. R. Richart, research associate professor

of theoretical and applied mechanics, U. of Ill., and V. P. Jensen, special research assistant, theoretical and applied mechanics, U. of Ill., much information was given with regard to the structural properties of poured Haydite concrete, a concrete employing a burnt shale aggregate and being used quite extensively in building construction. Following is a summarized statement of the results of the tests described in the paper:

Concrete was made with Haydite aggregates with no particular departure from ordinary methods. The usual mixing procedure was used and no difference was noted in the work required to place the material in forms and around reinforcement for beams of gravel-, Limestone- and Haydite-concrete. Gravel and Haydite concretes as used follow approximately the same relation between water-cement ratio and compressive strength. There was no indication that the strength of any of the mixtures was limited by the strength of the aggregate particles. The resistance to bond and diagonal tension was about the same proportion of the compressive strength for gravel and Haydite concretes. The modulus of elasticity of Haydite concrete is markedly lower than that of gravel concrete. The unit weights of concrete vary considerably for different richnesses and proportions of the aggregates; values as low as 93 lb. per cu. ft. for all Haydite concrete and 112 lb. per cu. ft. for concrete made with sand and coarse Haydite, were obtained.

In the paper on the Variations of Compressive Strength of Concrete within the Water-Cement Ratio Law, which was prepared by Ira L. Collier, assistant professor of civil engineering, University of Washington, Seattle, Wash., it was pointed out that tests show that the compressive strength of concrete of the same water-cement ratio decreases as the slump increases. Further, that, in general, it decreases as the percentage of sand is decreased, and also that the compressive strength decreases as the fineness modulus of the sand is increased. In explanation of the above, the theory was advanced that the above factors mentioned control the condition of the cement paste at the time the hardening process begins, and that it is the relationship of the cement and water at this time that determines the strength of the concrete.



The Strain Gage with Casing Removed Showing Simple, Rugged Construction

In the paper on the Effect of Dust-Coated Stone on the Properties of Concrete, which was prepared by A. T. Goldbeck, director, Bureau of Engineering, National Crushed Stone Association, the general conclusion was drawn that stone dust up to 5.7 per cent of the weight of stone used does not seem to have any particular effect on the properties of the concrete.

Concrete Pipe and Timber Considered

Clay and concrete pipe and the general subject of timber and wood preservatives were given careful consideration by the appropriate committees making reports. The main action of Committee C-4 on Concrete Pipe, was the presentation of new specifications for reinforced concrete culvert pipe and specifications for reinforced concrete pipe, both of which it offered for publication as tentative.

Committee D-7 on Timber, of which Dr. Herman von Schrenk is chairman, reported considerable activity during the year. The subcommittee on Specifications for Timber presented new specifications for timber piles, which it recommended be accepted as a tentative standard to supersede, when adopted, the present standard specifications for southern yellow pine piles and poles to be creosoted. The subcommittee, after careful consideration of the tentative revision of the standard specifications for wood joist, planks, beams, stringers and posts, proposed last year after co-operation with the Committee on Wooden Bridges and Trestles of the American Railway Engineering Association, recommended that the revised specifications be advanced to standard.

The subcommittee on Timber Preservatives reported that it has worked in close co-operation with committees of the American Wood-Preservers' Association and the American Railway Engineering Association. As a result, it presented a number of changes in the standards under its jurisdiction, and recommended as tentative a number of definitions of terms relating to timber preservatives, including those for creosote, creosote coal-tar solution, creosote distillate and coal tar. The committee also recommended for adoption certain revisions in the standard method of test for coke residue of creosote oils, and in the standard method of test for the distillation of creosote oil.

Subcommittee 10 recommended that a number of the tentative definitions of terms relating to timber, with minor editorial changes, be adopted as standard, and Subcommittee 11 presented a report on methods of determining the moisture content of timber.

Iron and Steel Receive Much Attention

Many reports were presented on iron and steel and allied subjects. Subcommittee 1 on Steel Rails and Accessories reported that it is developing specifications for intermediate manganese steel rails in co-operation with the A. R. E. A., and that it is also co-operating with the A. R. E. A. in the consideration of the present tentative specifications for soft steel track spikes. This committee also recommended that the tentative revisions of the standard specification for open-hearth steel rails, presented last year, be advanced to standard, and prepared as standard the following revision in the branding clause of the tentative specification for steel tie plates:

The name or brand of the manufacturer, the section of the tie plate and the year of manufacturing shall be rolled in raised letters and figures on the outside of the shoulder of the plates, and a portion of this marking shall appear on each finished plate.

Subcommittee 2 on Structural Steel for Bridges, Building and Rolling Stock, reported that it had made an exhaustive study of the advisability of changing the tensile requirements of present structural steel grades to a higher range, but was convinced that present demand did not warrant such a change at the present time. The committee is now working on the proposal of presenting new specifications for higher strength structural steel of the so-called medium grade for publication as tentative and is considering a revision in the tensile strength and other requirements of rivet steel in existing specifications under its jurisdiction.

Subcommittee 5 on Steel and Reinforcing Bars recommended the advancement to standard of the tentative revision of the specifications for billet steel reinforcement bars, proposed in 1928, which involves three main points; the elimination of the present recommendation that the structural grade be used un-

less otherwise specified, an increase in the allowable tensile range with no decrease in the minimum ductility, and an increase in the phosphorous limits of acid steels.

Subcommittee 6 on Steel Forgings and Billets considered a revision of the tentative specifications for carbon-steel forgings for locomotives, and recommended that these specifications be continued as tentative for another year. This subcommittee also proceeded with the development of specifications for normalized and tempered high-tensile alloy-steel forgings, and reported that it is considering the revision of the present standard specifications for quenched and tempered alloy-steel axles, shafts and other forgings for locomotives and cars. The subcommittee recommended that the tentative revision of the standard specifications for carbon-steel and alloy-steel forgings, presented last year, be advanced to standard.

Subcommittee 9 on Steel Tubing and Pipe reported progress in the development of complete specifications for fusion and resistance-welded pipe, hammer-welded pipe, lock-bar pipe and fabricated and riveted pipe of all kinds, as planned last year. This subcommittee recommended that the tentative revisions in the standard specifications for welded and seamless steel pipe, recommended at the last meeting, be advanced to standard.

Subcommittee 21 on Steel for Welding reported that it had gone carefully into the requirements of steel for fusion welding, and prepared a formal statement listing the steels made under the A. S. T. M. specifications which can be welded satisfactorily by the fusion processes now in general use. Some of the steels listed include; structural steel for bridges, buildings, locomotives and cars, boiler and fire box steel and steel for lap-welded and seamless boiler tubes.

Manganese in Rail Steel

In a paper on New Manganese Steel Alloys, by E. E. Thum, associate editor, *Iron Age*, in which special recognition was given to George J. Ray, chief engineer of the D., L. & W., and to C. B. Bronson, assistant inspecting engineer, New York Central, for contributions on the subject of rails, it was pointed out that contrary to the belief that manganese should be held below 1 per cent in order to avoid brittleness in steel, the alloy is very strong and tough as carbon is reduced proportionately as the manganese is increased. It was stated that over 250,000 tons of mild manganese steels are now used in the United States each year.

A number of recommendations affecting standards and tentative standards were made by Committee A-2 on Wrought Iron, among which was the proposal of the following new definition for wrought iron, to be added to the standard definition of terms relating to wrought iron specifications:

> Wrought iron is a ferrous material, aggregated from a solidifying mass of pasty particles of highly refined metallic iron, with which, without subsequent fusion, is incorporated a minutely and uniformly distributed quantity of slag.

Subcommittee 3 on Staybolt and Engine-Bolt Iron recommended a revision in the process clause of the standard specification for staybolt, engine-bolt and extra-refined wrought iron bars, which eliminates reference to puddling and any process of manufacturing, but refers to the proposed definition for wrought iron. Subcommittee 6 on Wrought Iron Blooms and Forgings also recommended a revision of the process clause of the standard specifications for wrought iron rolled on forged blooms and forgings for locomotives and cars, in which the present reference to puddling or any process of manufacturing will be omitted and reference made to the proposed definition for wrought iron.

Subcommittee 4 on Car Wheels, of Committee A-3 on Cast Iron, recommended a number of minor changes in the tentative specifications submitted last year on Chilled Tread Cast Iron Wheels, and Subcommittee 13 on High Test Cast Iron recommended a number of revisions in the specifications for high test gray iron castings, feeling that it was necessary to increase the requirements on physical properties of these specifications in view of the fact that the present requirements no longer are considered satisfactory. Subcommittee 18 recommended that the tentative specifications for gray iron castings for valves, flanges and pipe fittings, submitted last year, be adopted as standard.

Corrosion is Studied

In the report of Committee A-5 on Corrosion of Iron and Steel, Subcommittee 5 studying the total immersion tests of the society, reported on the completion of the Annapolis tests where the specimens were exposed for a period of 10 years totally immersed in the running brackish water of Severn river. Special attention was directed to the conclusion of the committee that the results at Annapolis, as well as those with regard to similar immersion tests at Pittsburgh and Washington, representing three widely varying kinds of water, brackish, acid mine drainage and filtered drinking water, showed no material difference in corrosion resistance between the copper-bearing and non-copper-bearing metals under the conditions of the tests. Progress was reported on the sea water immersion tests at Key West, Fla., Portsmouth, N. H. and Port Arthur, Texas.

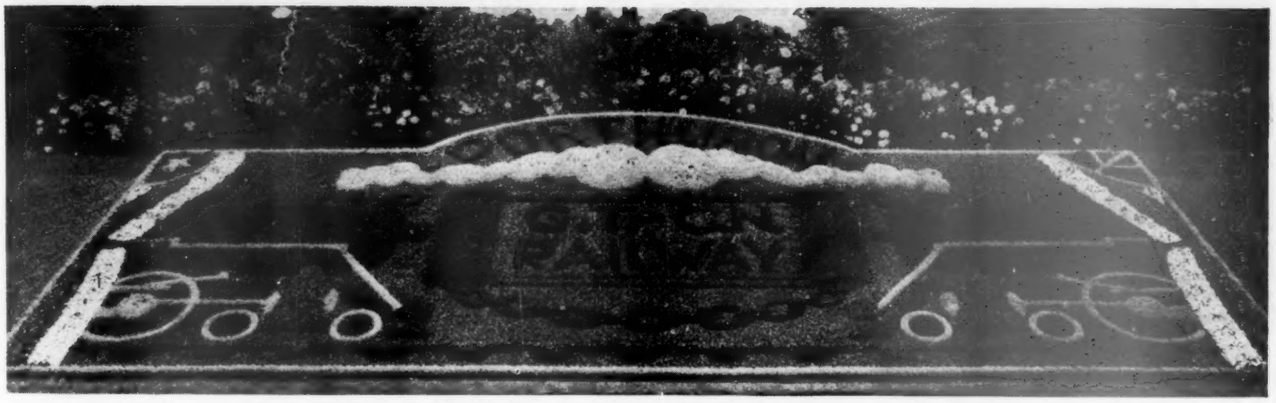
Subcommittee 6 on Specifications for Metallic-Coated Products continued its study of wire and wire products and recommended that a number of its tentative specifications and methods of test, with certain revisions, be advanced to standard. Among these were specifications for zinc-coated wire fencing; specifications for zinc-coated chain link fence fabric, galvanized after weaving; and specifications for zinc-coated barb wire.

Subcommittee 8 on Field Tests of Metallic Coatings, reported that the results being observed of its tests indicate conclusively that a sulfur atmosphere, such as that around industrial centers, produces soluble zinc compounds which greatly shorten the life of the coatings.

Subcommittee 9 on Metal Culvert Tests reported that, with the co-operation of the railroads and the highway departments of the different states, it is making substantial progress in its program of field tests of metal culverts. It plans to test culverts of seven different types of base metal, making about 100 installations of each type of metal, installing the first lot this summer.

In the report of Subcommittee 3 on an inspection of the atmospheric tests on black iron metal sheets at Annapolis, Md., it was pointed out that at the close of 13 years' test, all failures which have been observed have been in the sheets of non-copper-bearing metals. Subcommittee 6 on Atmospheric Corrosion, of Committee B-3 on Corrosion of Non-Ferrous Metals and Alloys, reported that tests are about to be undertaken at seven points throughout the East on 24 different materials, including copper, aluminum, brass, duralumin nickel, zinc and a number of alloys.

With the reports on the above subjects was printed an interesting paper on Fatigue Tests of Fillet Welds, by R. E. Peterson and C. H. Jennings of the research laboratories, Westinghouse Electric & Manufacturing Company. Other subjects presented to the meeting, with certain phases of interest to railroad men, were those on paint, waterproofing and roofing materials.



The Port Huron Bed Symbolizes the Joining of the Grand Trunk and the Canadian National

Grand Trunk Beautifies With Flowers

Over 248 beds, more than 100,000 plants and 16 acres of lawn are maintained at 80 stations

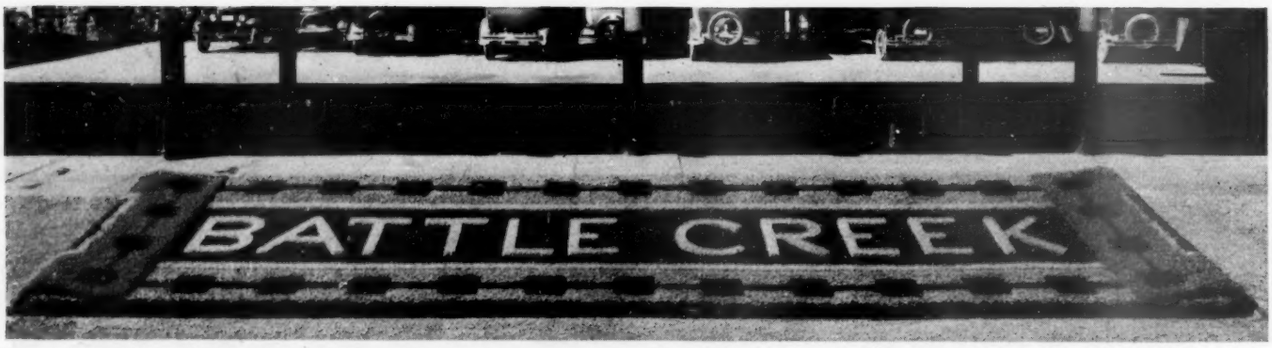
THE Grand Trunk Western, as a result of concentration on the development of horticulture to beautify station grounds, now has a floral display, the like of which is found on few other railroads. Last year a total of 248 flower beds and 16 acres of lawns were maintained at 80 stations, while the number of plants in beds and boxes totaled more than 100,000. This array has been developed by establishing greenhouses from which plants can be forwarded to agents in the spring and retrieved in the fall.

One of the outstanding floral beds last year was that at Jackson, Mich., specially designed to commemorate the centenary of the city's founding. An additional mark of historical significance was the fact that the Jackson station grounds are located on the site where sod was first broken in that city.

In completing the design of this plot, special attention was paid to the historic significance of the grounds. The picture of the carpet bed depicted the founding of the city by an allegorical foundation stone being lowered against the rising sun. The numerals 1829 appeared on the stone and, underneath, in large letters was worked the word "Jackson." The American flag banked each side. The color scheme was worked out with some 7,100 plants, in red, yellow, brown and green alternantheras; white dwarf alyssum; and dwarf blue lobelia.

Apart from its centennial significance, Jackson is claimed to be the birthplace of the Republican party in 1854, and a secondary celebration was held to commemorate the event, which launched a new political party in the Union. To give due acknowledgment to this phase of the celebration, an elephant was designed and centered in a triangle just below the main flower bed.

In 1929 the Floral Display at Jackson, Mich., Commemorated the Founding of the City and the Republican Party



The Flower Bed at Battle Creek, Mich., is Typical of the More Elaborate Displays

The ingenuity of the railway in co-operating in a floral way with the city in its centennial year aroused wide interest and permission was secured by the city to erect a replica of the original log cabin on the grounds and to display numerous exhibits of pioneer days. The Jackson station flower bed was designed for a special and a unique occasion, but it may be added that this station has long been noted for the care of its lawn and floral displays.

Another striking bed is that at the Port Huron station. In the designing of this bed an effort has been made to give it something of an international character. This bed, which has an elaborate carpet of flowers and foliage, is located just east of the depot and has won much praise for its excellency as a work of horticultural art. The back is raised three feet, so that the design slants towards the tracks and is seen to advantage from the train.

The floral picture covers a plot of ground 30 ft. long and 13 ft. wide. It contains 9,000 plants and depicts the junction of the Canadian National and the Grand Trunk. It is centered by a rug of yellow alternantheras, turned up on both ends, on which the initials, "C. N." and "G. T." appear with the word "Railway" underneath, all formed by brown alternantheras. A chain symbolizing the unity of the two railroads extends at the bottom of the rug from end to end. On either side of the lettering is the front portion of a locomotive, worked out with gray santalinas and green alternantheras. At the top, the smoke from both locomotives joins and is represented by gray santalinas. In the upper portion, forming an arch, are the words "Port Huron" in large letters of yellow alternantheras. On the west end of the bed, in curtain effect is a portion of the American flag; and on the east end the Canadian flag, worked out with white dwarf alyssum, dwarf lobelia, and red alternantheras. Extending around the 330 sq. ft. of flowers in the bed, and dividing its parts, are borders of gray santalinas. A 60-ft. hedge of hydrangeas and mock-orange bushes fences the grounds from the street and forms a background for the bed. Owing to the fact that there are no bare spots on the bed where the gardeners can stand to trim the plants, it was necessary to improvise a platform which could be used over the bed. This platform is supported by stools placed on the lawn.

Less elaborate beds of flowers and foliage adorn the grounds at the Port Huron freight sheds and car shops and the St. Clair tunnel power house. The Battle Creek shops are adorned by a park adjacent to the general office building, which is noted for its flower beds, foliage and well-groomed lawn.

Olaf Jensen, of Battle Creek, is chief designer of all flower beds and has charge of the maintenance of station grounds over the western lines. Mr. Jensen is assisted in this work by George H. Clarke, of Port Huron.

A. I. E. E. Holds Transportation Meeting

SIX papers concerning various phases of heavy electric traction and the use of internal combustion engines for rail motor cars and locomotives were presented at the summer convention of the American Institute of Electrical Engineers, held at Toronto, Canada, June 23-27.

Rail Bonding

An increasing preference for heat-applied or welded bonds is indicated in a paper on rail bonding practice and experience on electrified steam railroads by H. F. Brown, assistant electrical engineer, New York, New Haven & Hartford. This paper deals primarily with the development, description and characteristics of various types of rail bonds used at track joints for traction return and, incidentally, signal track circuits. It outlines their performance and reasons for selection on representative electrified steam railroads which include: Baltimore & Ohio; Boston & Maine; Chicago, Milwaukee, St. Paul & Pacific; Delaware, Lackawanna & Western; Illinois Central; New York Central; New York, New Haven & Hartford; Norfolk & Western; Pennsylvania; Reading; Virginian.

Power Consumption for Yard Switching

Electric Power Consumption for Yard Switching is the title of a paper by P. H. Hatch, engineer of automotive equipment, New York, New Haven & Hartford. It consists of a study of electric power consumption for switching locomotives in the Oak Point yard of the New Haven. Data were collected on two electric locomotives equipped with the necessary instruments and a period of 39 1/6 hours operation was observed and recorded. The average power consumption was 96 watt-hours per total ton-mile. The minimum was 72 watt-hours for flat yard classifying, and the maximum was 157 watt-hours per total ton-mile for unloading car floats.

Auxiliaries for M. U. Cars

Auxiliaries for High-Voltage D. C. Multiple Unit Cars, is the title of a paper presented by C. J. Axtell,

transportation engineering department, General Electric Company. The treatise deals essentially with the type of suburban equipment built for the Illinois Central and the Delaware, Lackawanna & Western. It describes and shows reasons for the use of 32-volt control circuits on all such cars, heaters and motor-generator sets which operate at trolley potential, and compressors which operate on 1500 volts and which receive power direct from the trolley or from a generator driven by a double commutator motor when the trolley potential is 3000 volts.

Auxiliary Circuits for M. U. Cars

Othmar K. Marti, chief engineer, American Brown Boveri Company, Inc., and Walter Giger, railway department, of the same company, presented a paper on auxiliary circuits for high-voltage d.c. motor car equipment. The first part of the paper is devoted to cars equipped with apparatus for converting the high-voltage d.c. overhead line current to the voltage for operating standard auxiliary equipment. The second part is devoted to auxiliary equipment suitable for operation on the higher d.c. voltages. This paper refers mostly to development work carried out in Europe and is presented with the thought that the basic principles underlying these developments are also applicable to American multiple unit cars.

Control Systems for Self-Propelled Cars and Locomotives

Control Systems for Oil and Gasoline Electric Locomotives and Cars, by N. L. Freeman, railway equipment engineering department, Westinghouse Electric & Manufacturing Company, consists of a review of the development of self-propelled railway vehicles which utilize electric transmission. Particular attention is given to ways and means of regulating the torque demand on the internal combustion engine and the supply of electric power to the auxiliaries.

Electric Transmission for Rail Cars and Locomotives

Electric Transmission and Control of Power from Internal Combustion Engines for Transportation, is the title of a paper by S. T. Dodd, transportation engineering department, General Electric Company. This paper deals broadly with the subject of internal combustion engines and electric drive as applied to rail motor cars and locomotives.

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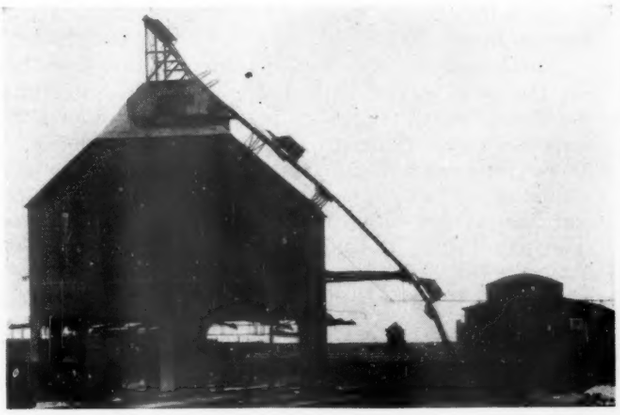


A 2,000-ton, 6-track Coaling Station with an Automatic Sand Plant Built for the Boston & Maine at Boston, Mass., by the Roberts & Schaefer Company

A. E. R. A. Report on Heavy Electric Traction

THE report of the Committee on Heavy Electric Traction of the American Electric Railway Association was presented at the annual convention held in San Francisco, June 23-26. Subjects assigned the committee included the following: Review of manual; study of track and third rail bonds and other methods of joining third rail; study and collection of data covering self-propelled cars and locomotives; collection of information on articulated trains; study of train make-up and terminal switching with multiple-unit cars; collection of data on electrified mileage and electric locomotive tonnage on steam roads; study of third rail and overhead clearance with special reference to shipments and steam railroad operation.

In connection with the revision of the manual, a diagram and table covering pantograph dimensions is included to show the need for revising the existing diagrams.

The sub-committee on rail bonds has prepared a specification for stud terminal rail bonds which is included in the report. This specification has been approved by the principal manufacturers of stud terminal bonds and was prepared jointly with sub-committee No. 12, Electrical Section, A. R. A. The committee reports that the present situation with regard to various types of welded bonds does not permit any standardization.

Electric Power in Yard Operation

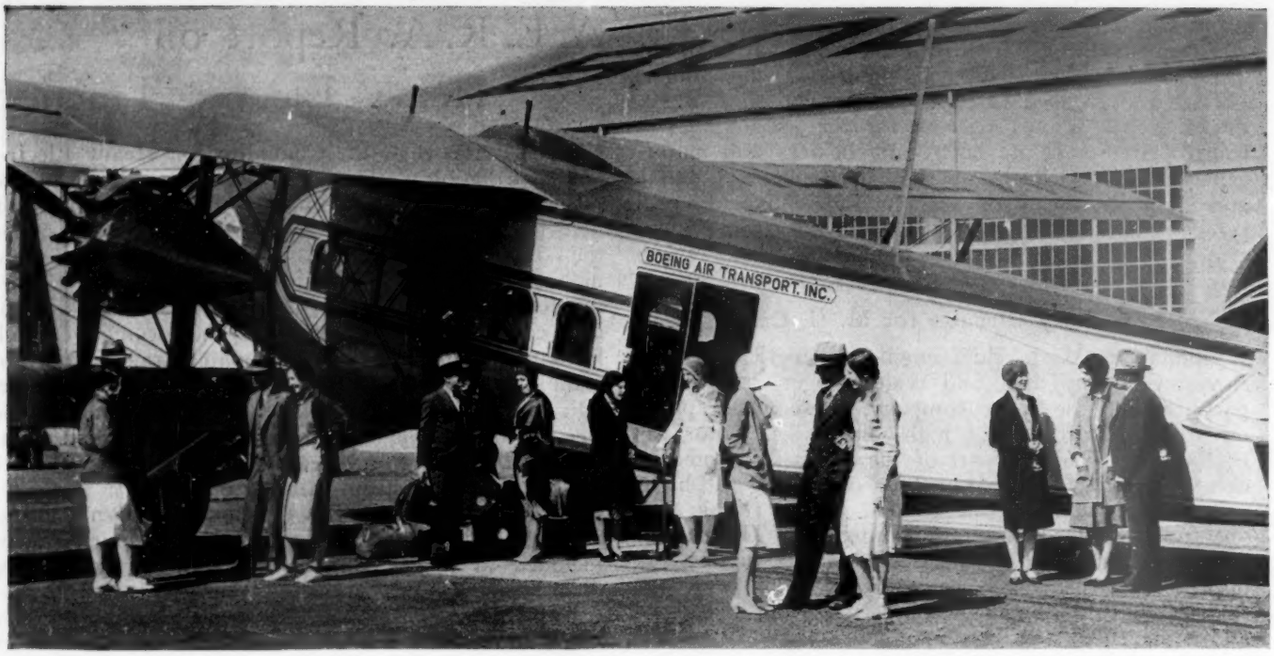
The sub-committee studying branch line electrification and self-propelled cars and locomotives has collected data concerning the power consumption of steam, oil-electric and straight electric locomotives used in switching service. It is the intention of this sub-committee to present data in its final report which will permit making a rough comparison between the coal consumption of steam locomotives and the kilowatt-hour consumption of electric locomotives engaged in similar yard switching service.

Data and diagrams are included in the report describing new articulated trains placed in service in the United States and foreign countries during the past year and tabulating all such trains now in service.

The sub-committee which is studying train make-up has prepared a questionnaire on split operation of multiple-unit cars between terminals with the intention of collecting data for next year's report.

Data collected by the sub-committee on electrified mileage and electric locomotive tonnage includes a table covering 106 oil-electric locomotives now in service in North America. This table corresponds closely to that which was included in the A.R.A. Mechanical Division report on locomotive design and construction and which was published in the Daily Edition of the *Railway Age* for June 25, 1930, page 151. Tables are also included which list electric locomotives placed in service during the past year. These tables correspond to a similar one published by the electric rolling stock committee, Mechanical Division, A.R.A.

The general subject of clearances is now being studied by committees of the A.R.E.A. and the Electrical section of the A.R.A. The suggestion of a revision of clearance with respect to shipment and steam locomotive operation will receive consideration in this study, and the A.E.R.A. sub-committee reports that further action appears to be unnecessary.



The Boeing 18-Passenger Tri-Motored Airplane

Chicago to San Francisco in Twenty Hours

The Boeing System inaugurates through airplane for passengers, involving both night and day flying— Provisions for safety and comfort

By P. G. Johnson*

ONE hundred years, almost to the day, after the first covered wagon started to push its way westward to reduce time and space between the Missouri river and the Pacific ocean, the Boeing System, operator of the nation's two longest mail and passenger lines, and with nine million miles of flying experience, inaugurated the world's longest regularly operated, night and day, tri-motored plane, passenger air service. The preparations which the Boeing System has made for this new service, and the methods employed in designing and building the equipment, recruiting the personnel and developing its traffic department, are of interest not only to airplane operators, where the name of Boeing is well known, but to railroad men as well.

The Boeing System did not embark upon the handling of passengers on a large scale until very recently, although it is the nation's largest air transport operator in point of mileage already flown, and was the pioneer commercial air line, linking the middle west and the Pacific Coast, and Los Angeles and Seattle. However, it has been building for nearly three years against the day when it would actively seek passenger business, traffic which it has handled heretofore only as a corollary to mail.

The history of the Boeing transportation lines bears on the new service. In 1927, when the government decided to retire from the operation of air mail planes, bids were called for to take over the operation of the trans-continental route. At first a large number of potential bidders appeared, but one by one they dropped out when they investigated the operating problems. The San Francisco-Chicago leg of the transcontinental route called for a heavy investment, the best type of planes which could be built or bought, and high operating efficiency.

Up to this time the Boeing Airplane Company, which had confined itself largely to the manufacture of military planes, had never been an air line operator. But W. E. Boeing put in a bid on the Chicago-San Francisco route, won the award, and was given 150 days in which to design, build, test-fly and place on the

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route sufficient equipment to fly this 1,943-mile line, the longest air route in the world.

The transcontinental route between San Francisco and Chicago probably presents wider extremes of operating conditions than any air line in the world. The Boeing mail planes and also its tri-motored transports fly from sea level to 8,000 to 12,000 ft. On one trip last winter, the difference in temperature on a 9-hr. flight between San Francisco and Cheyenne was 100 deg. Altitudes of landing fields vary from sea level to approximately 6,400 ft. Considerable of the route is over flat prairie country and some of it over mountain ranges, the majority of which, however, are plateau mountains, offering landing fields in case of emergencies.

Boeing executives regard the San Francisco-Chicago route as the backbone transcontinental route. Unlike the competitive air transport lines to the south, it draws its patronage, mail, express and passengers, from the territory north and south of its route, which bisects America between the Great Lakes and the Golden Gate.

Out of its three years' experience and nine million miles of flying, the Boeing System has now developed a 20-hr. night-and-day schedule, using tri-motored, eighteen-passenger planes (or the equivalent weight of 18 passengers in mail and passengers) between Oakland, on San Francisco Bay, and Chicago. The fare of $200 between Chicago and San Francisco is based on a charge of approximately 10 cents a mile. This fare includes transportation to and from airports and meals en route. Each plane carries two pilots, each of whom has had from 3,000 to 9,000 hours flying experience, and a stewardess. It is believed that this is the first time in the history of air transportation that the couriers on planes have been women instead of men. Boeing executives believe women are better adapted than men for the work of serving lunches and attending to the comforts of the passengers; and also believe it is good business psychology to employ stewardesses.

Active Solicitation of Business

Extensive efforts are being made to develop passenger traffic. The company has appropriated a sum of money for advertising in newspapers in cities served. The advertising is quite similar to that done by railroads, except that the sales argument now is "speedy travel." Ground floor ticket offices have been obtained in the larger cities served. A commission of five per cent is paid to bona fide agents and individuals for actual tickets sold. This five per cent is in line with the understanding among air transportation companies. Thirty pounds of baggage is carried free, but heavy excess baggage is charged for at a stipulated fee, high enough to discourage too much excess baggage.

Because Boeing now serves more well populated cities than competitive southern lines, it seeks intermediate business. However, tickets between intermediate points are sold subject to capacity booking of through passengers. The company reserves the right to cancel bookings before passage or en route because of adverse weather or other conditions. In case of interrupted flight, the passenger is refunded, at the nearest office, a sum equivalent to the fare which had been charged for the incompleted part of the flight. The company has worked out a complete schedule, so that in case it is wise to put passengers on trains, they can be entrained at the earliest possible moment. Ticket agents are trained to assist passengers in working out connecting train schedules.

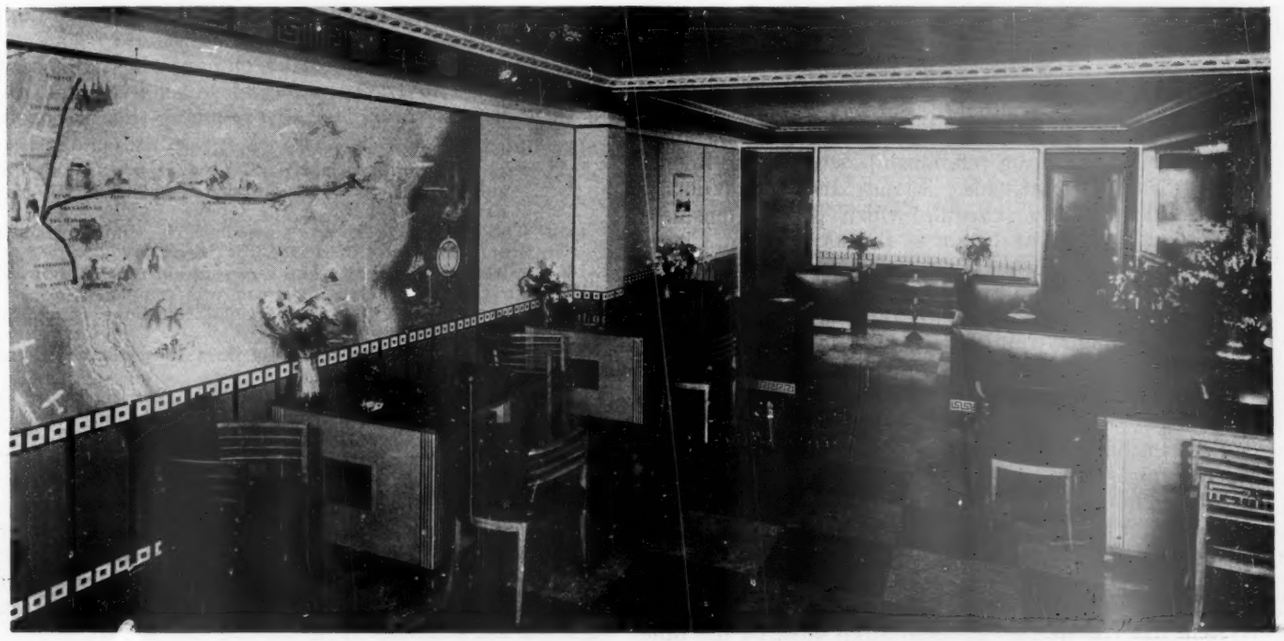
In short, the Boeing lines are handling passengers in about the same manner as do railroads. The Boeing System has A. G. Kinsman as passenger traffic manager. For many years, he was associated with the Northern Pacific as city ticket agent.

Present Schedules

The schedule now established follows:

Westbound Read Down	CHICAGO-SAN FRANCISCO		Eastbound Read Up
	(Central Time)		
8:00 a.m. Lv.	Chicago	Ar.	6:00 p.m.
10:15 a.m. Lv.	Cedar Rapids	Ar.	.....
11:30 a.m. Lv.	Des Moines	Ar.	2:00 p.m.
1:00 p.m. Lv.	Omaha	Ar.	12:40 p.m.
1:30 p.m. Lv.	Lincoln	Ar.	.....
	(Mountain Time)		
2:45 p.m. Lv.	North Platte	Ar.	.....
5:00 p.m. Lv.	Cheyenne	Ar.	7:30 a.m.
9:30 p.m. Ar.	Salt Lake City	Lv.	4:00 a.m.
	(Pacific Time)		
9:00 p.m. Lv.	Salt Lake City	Ar.	2:30 a.m.
1.30 a.m. Lv.	Reno	Ar	10:00 p.m.
2:30 a.m. Lv.	Sacramento	Ar.	8:50 p..m
4:30 a.m. Ar.	Oakland	Lv.	8:00 p.m.

Luncheons are served aboard the planes, with a meal



Interior of Boeing Lines Ticket Office on Michigan Ave., Chicago

on the ground at Cheyenne. Westbound, leaving Chicago at 8 a.m., passengers have lunch after leaving Omaha, dinner at Cheyenne and sunrise breakfast in San Francisco; while eastbound, leaving San Francisco (Oakland Airport) at 8 p.m., breakfast is served at Cheyenne and lunch after departure from Omaha. Arrival at Chicago is in time to permit passengers to catch connecting planes or overnight trains.

Favored by Advantageous Connections

That there is to be intense rivalry between the transport lines for transcontinental air traffic is a foregone conclusion, and the Boeing organization has fortified itself on the central route which bisects western America. It not only serves populous terminal cities but large intermediate points. The Boeing organization has reached out to get the travel from points north and south of its line. Recently it was announced that a connecting schedule had been worked out with the Varney Air Lines, so that Chicago people can be moved westward by Boeing to Salt Lake, and then transfer to the Varney line, so that they will reach the Pacific Northwest with the loss of only one business day. At Salt Lake City, Boeing accepts business from the National Parks Airways, connecting Montana and Idaho cities with Salt Lake, while the Western Air Express Los Angeles-Salt Lake route is another feeder line at this point. The Boeing System has established a through fare to Los Angeles, via San Francisco, however, which is the same as that to San Francisco.

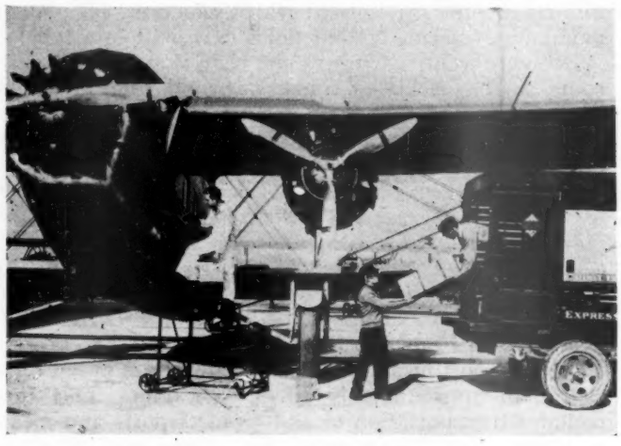
At Cheyenne the Boeing System will tap the Denver and Colorado business, and at Omaha there is overnight connecting train service from Minneapolis, St. Paul and other northwest points, and from Kansas City, St. Louis and the Southwest. The Boeing System is the only transcontinental line serving Chicago directly. Chicago is regarded as a strategic point in the Boeing set-up, partly because there is an interchange of traffic at Chicago with the Stout Air Lines, which operate the Chicago-Detroit-Cleveland plane service. Stout Air Lines, like Boeing, is a subsidiary of the United Aircraft & Transport Corporation, which can now offer continuous plane service from San Francisco to Chicago, Detroit and Cleveland, approximately 2,300 miles, leaving only the gap between Cleveland and New York to be filled before it has a continuous all-plane service across the continent.

The Boeing organization believes that the airplane will supplement rather than be entirely competitive with the railroads. The situation at Chicago, for instance, reveals the interlocking relationship between the Boeing System and the railroads. Planes arrive and depart from Chicago on a schedule which permits business men, living in cities as distant as Buffalo, Detroit, Cleveland, Pittsburgh, Columbus, Cincinnati, Milwaukee, Indianapolis, Louisville, to travel to and from the Pacific Coast with the loss of only one business day, through overnight train service to Chicago, and Boeing plane service beyond.

Speed Offsets Less Comfort

Frequently ticket agents are asked how passengers sleep at night on the Boeing planes which do not have berths. The answer is that the average train passenger does not get more than a few hours sleep even in Pullmans, and that in an overnight flight most of the passengers will doze and get nominal rest. Experience shows that 75 per cent of the passengers the Boeing System has transported at night sleep most of the time in the air after their initial airplane trip. To provide berths would mean reducing the passenger capacity one-half and doubling the fare. Experience shows that most people who now fly in airplanes travel to save time. When they can go three times as fast in airplanes as in limited trains, they are willing to forego the luxury of a Pullman berth at night.

The Chicago-San Francisco tri-motored transport planes incorporate various features developed from millions of miles of flying. They have a wing span of 80 ft., weigh eight and three-quarter tons when fully



Mail and Express Is Carried in a Large Compartment Ahead of the Passenger Cabin

loaded, and have three 525 hp. Hornet engines. The planes can climb 3,000 ft. higher than the loftiest of the five mountain ranges flown over. There are adjustable reclining seats and individual reading lamps, forced ventilation and heating, a large lavatory, and hot and cold running water.

Two-way voice communication between ground stations and planes in the air has been provided for. The Boeing System has installed 14 ground stations in 7 states and has installed the necessary radio equipment in its mail as well as passenger planes. With the radio communication system in operation, pilots will be informed at all times while enroute of weather conditions ahead of them.

It is interesting to note the climax which this new service brings to transcontinental travel over this, the oldest east-west travel lane. In sequence this has been:

1830—First covered wagon left St. Louis.
1858—First overland stage left San Francisco. (This required 21 days between there and the Missouri River.)
1860—The Pony Express was started which required 11 days from the Missouri River to Sacramento.
1861—First telegraph message was sent across the country.
1869—First transcontinental railroad was completed.
1915—The first direct transcontinental telephone communication was had.
1920—The first air mail was run from the Atlantic to the Pacific.
1930—Boeing System starts tri-motored passenger transport service on a 20-hr. night-and-day schedule over the historic Covered Wagon trail.

A SPEED OF 150 MILES AN HOUR is forecast in newspaper reports of the rail-plane, the invention of a Scottish engineer, which will be tried out near Glasgow this summer. The chief feature of the new method of transportation is a cigar-shaped car, powered by gasoline or electricity, driven by propellers at each end, and suspended from overhead steel trestles.

Territorial Variation in Cost of Service*

By M. O. Lorenz

Director, Bureau of Statistics, Interstate Commerce Commission

IN determining the relative level of freight rates for various rate territories in the United States, the question of what is the relative cost of service in these territories becomes of importance. Comparisons of traffic density are often made, that being taken as an indication, but an indefinite one, of relative cost. Grades, fuel costs, temperature, and other conditions affecting operations are sometimes made the basis of comparisons, but such details do not show what the net effect of all considerations should be in fixing a rate.

The present study attempts to apply a statistic test to the territorial variation in total cost of carload freight service. With the available statistics, a completely satisfactory study cannot be made. Railroads often cross the boundaries of a rate territory, and hence the average costs have to be based on groups of railroads instead of on the operations performed within rate territories. The existing statistics and accounts also do not permit of a refined comparison of unit costs between two groups of railways. There is no one unit of transportation service that has the same significance for each railway. What is desired is a measure of the comparative cost of performing the specific services indicated by tariff charges, such as transporting a carload of lumber a given distance.

It should be emphasized that our problem is that of finding relative cost and not the absolute unit costs upon which to base a rate scale. If the latter were the object, it would be necessary to have a more accurate separation of costs than is here used, and to have an accepted rate base. For comparative purpose, the Interstate Commerce Commission tentative or final values brought down to date are satisfactory whatever may be thought of the adequacy or inadequacy of the general level of those values. Such values are used herein to get the return on investment. Again, if one were comparing the cost of performing various types of operations, additional precautions would be necessary, such as to compare only local train costs in one territory with local train costs in another. But the proportion of local and through trains may be affected by the volume and density of the traffic, and since these are territorial differences the effect of which we wish to measure, it seems proper to compare the average cost for whatever mixture of local and through and main line and branch line trains happens to exist in the various territories. The tariff rates do not depend on the kind of train in which a car happens to be hauled.

Method Employed

The method of cost comparison herein employed is to divide the total sum required from the freight service to cover operating expenses, taxes, and return on investment of Class I railways into yard and station costs on the one hand and all other costs on the other hand. The yard and station costs, after excluding those attributable to the platform and clerical expenses connected with l.c.l. freight, are compared with the number of carloads originated, terminated, or interchanged equated to a common basis, while the other costs are compared with the number of gross ton-miles hauled in revenue freight service. A separate computation is also given on the basis of loaded car-miles. The gross ton-miles basis, which combines the weight of cars and contents, including empty haul, reduces at least partly to a common denominator line haul movements of varying load per car but not completely. Roads with traffic consisting chiefly of coal or iron ore have much heavier average train loads and lower unit costs, not only per net ton-mile but also per gross ton-mile, than do roads having a miscellaneous mixture of freight. As being in a class by themselves, the coal and ore roads have been excluded from the summary totals. The excluded group was made to cover all roads with an average carload in excess of forty tons.

The following were also excluded because of their not reporting gross ton-miles: Staten Island Rapid Transit, and Baltimore, Chesapeake & Atlantic. As reports of gross ton-miles by Class I railways are in some instances on a "system" basis, it was necessary to include thirteen Class II and Class III railways.

It may be objected that if the gross ton-mile costs of the coal and ore roads are not comparable with those of other roads, there may also be a lack of comparability to a lesser degree in comparisons among the other roads. This objection has been met in two ways: First, by giving the average load per car for each of the groups for which costs are given so that some judgment can be formed as to the extent and direction of the error, and second, the comparative costs have also been computed on a loaded car-mile basis, which would tend to understate costs where the gross ton-mile basis overstates them.

In Table I the relative cost is shown for the year 1928 for the designated groups of railways for a carload of freight for a distance of 300 miles. In the column headed "gross ton-mile basis," a car of 55 gross tons (car and contents combined) for both loaded and empty movements is used to compute the line haul part of the expense. This would represent a 25-ton load with a 20-ton tare weight and a 50 per cent empty haul. In the column headed "loaded car-mile basis," the average loaded car-mile line haul cost is computed for 300 miles. In both columns the same station and yard cost per loaded car is added, without adjustment for the possible extra expense of switching the heavier cars.

This table shows that, generally speaking, no marked difference in relative cost is shown whether one uses the loaded car-mile or the gross ton-mile basis. This

* Statement made public by the Interstate Commerce Commission.

is because the regions shown happen to have similar average carloads and percentages of empty haul. The combined cost of terminal and haulage service for a representative distance is a little less in the South than in the Eastern district and from 4 to 7 per cent more in Western trunk line territory than in the East. The Southwestern region shows on the whole about the same cost level as the western trunk line group. For the Mountain-Pacific group the cost on the gross ton-mile basis is from 25 to 34.5 per cent higher than in the East according as the Union Pacific railroad is included or excluded in the Mountain-Pacific group. The differences between the eastern district and the western groups would be less than is shown in Table I if the passenger deficiency is not considered. The relative importance of the passenger deficiency appears in a later table.

Table I

District, region or group of Class I railways.*	Relative cost, ** 1928: Gross ton-mile basis (Eastern district taken as 100)	Relative cost, ** 1928: Loaded car-mile basis (Eastern district taken as 100)	Ton-miles per loaded car-mile	Per cent empty of loaded car-miles
Eastern district	100.0	100.0	27.0	58.46
Southern region, including Richmond, Fredericksburg & Potomac R. R.	99.2	98.6	25.2	59.79
Western Trunk Line railways, Chicago & Alton; Chicago & North Western; Chicago, Burlington & Quincy; Chicago Great Western; Chicago, St. Paul, Minneapolis & Omaha; Duluth, South Shore & Atlantic; Duluth, Winnipeg & Pacific; Green Bay & Western; Minneapolis & St. Louis; Minneapolis, St. Paul & Sault Ste. Marie; Quincy, Omaha & Kansas City; St. Joseph & Grand Island	107.2	104.0	24.6	60.44
Mountain-Pacific railways, excluding Union Pacific R. R.; Denver & Rio Grande Western; Denver & Salt Lake; Los Angeles & Salt Lake; Nevada Northern; Northwestern Pacific; Oregon Short Line; Oregon-Washington R. R. & Navigation Co.; San Diego & Arizona; Southern Pacific; Spokane International; Spokane, Portland & Seattle; Western Pacific	134.5	133.1	23.1	54.68
Mountain-Pacific railways, including Union Pacific R. R.	125.0	122.1	22.3	53.75
Other Northwestern and Central Western railways, including Union Pacific R. R.	116.2	113.4	23.6	54.51
Total Northwestern and Central Western regions	116.3	113.7	23.8	56.18
Southwestern region	104.9	104.0	23.5	60.63
Western district as a whole	113.4	111.2	23.7	57.23
Total of preceding railways	105.4	104.5	25.3	58.11

* Excluding coal and ore roads as previously explained. The railways composing the various "districts" and "regions" are shown in the regular statistical publications of the Interstate Commerce Commission.

** Cost includes passenger service deficit and return on value.

These index numbers of relative cost refer to the freight business taken as a whole. They make no distinction between class rate traffic and commodity rate traffic. They also refer to the cost via the actual route, not via the short line route. Two territories with the same cost index as here computed, might require different rate levels if there were more circuitous hauling in one than in the other, if more free services such as out of line hauls to a transit point were granted in one than in the other, if there were more frequent interchanges between railroads for a given length of haul in one than in the other, or if proportional rates below the regular class and commodity rates were more freely granted in the one territory than in the other.

If the differences in costs shown in Table I seem less than might have been expected from rate discussions in the past, it may be pertinent to observe that between the calendar year 1928 and the three fiscal year period, 1911-1913, there was an increase of only 31.6 per cent in the ton-miles of the Eastern district as against 106.2 per cent in the Southern region, and 109.3 per cent in the Southwestern region. (See Statement No. 2982, I.C.C. Bureau of Statistics.)

Further details regarding the method of obtaining the relative costs are given in the following paragraphs:

For each of the groups of railways, the operating expenses of 1928 were divided between passenger and freight services and to each total a share of taxes, rents, and 5¾ per cent on the Interstate Commerce Commission valuations brought down to December 31, 1927, was added on the basis of the expense division. The result gave a deficit for the passenger service. This deficit was added to the freight total on the theory that taking any district as a whole, any deficiency in the passenger service would presumably be made up from the freight service as a whole if possible. The total cost so found for the freight service in each territorial group was then divided into two parts, one to represent yard and station service, and the other road haul service. This division was made on the basis of the assignable accounts in maintenance of way and structures and transportation accounts. From the station and yard expense a deduction was made of $2.111 plus overhead for each ton of l.c.l. freight originated or terminated to eliminate the cost (including overhead) for handling and clerical service peculiar to l.c.l. traffic, so that the remainder of the cost might be more accurately comparable on the basis of the car movements. An allowance for the cost of train switching was transferred from the road haul cost to the yard and station cost. Also, an allowance for the cost of re-classifying cars at intermediate terminals was transferred from the yard cost to the road haul cost. The cost of interchanging freight between railways was taken account of separately as explained below. Appropriate units of work done were next computed.

For the road haul work, the revenue gross ton-miles for both loaded and empty movements were used, the non-revenue gross ton-miles, which are not separately reported, being assumed to be in the same proportion to the revenue gross ton-miles as the net non-revenue and revenue ton-miles are to each other, the latter being regularly reported. This may not be correct but probably any inaccuracy involved would not materially affect the comparison of regions. For comparison, revenue loaded car-miles were used in a separate computation in place of gross ton-miles.

For the switching and station work the unit was the carload handled. It was assumed that it costs as much to originate as to terminate a carload, and that to deliver it to a connection costs the delivering road and the receiving road *each* 70 per cent as much as to originate a carload. Hence carloads reported as originating and terminating on line are counted as 2 units; carloads originating and delivered to connections as 1.7 units; carloads received from connections and terminating on line as 1.7; and carloads received from and delivered to connections as 1.4 units. Less than carload traffic was converted into carloads by dividing the tons by 5. The sum of these carload units divided into the station and yard expense gave the cost of originating or terminating a carload. It is uncertain to what

extent varying weights per car affect the cost of handling at terminals, but an allowance for varying weights was not considered necessary in this study as the relative costs would be but slightly affected for the designated groups of roads because the variation in average carload is not wide.

The costs and units are shown in Table II. The figures relate to the year 1928.

Table II

District, region or group of Class I railways*	Switching and station cost** (millions)	Road haul cost** (millions)	Work done: Carload units (thousands)	Work done: Revenue gross ton-miles (billions)	Work done: Revenue loaded car-miles (millions)
Eastern district	$888.7	$996.4	64,122	392.9	6,360.9
Southern region, including Richmond, Fredericksburg & Potomac	236.4	373.2	20,126	135.1	2,233.2
Western trunk line railways	143.7	238.9	11,515	79.2	1,359.8
Mountain-Pacific, excluding Union Pacific R. R.	97.0	210.9	5,952	57.0	947.2
Mountain-Pacific, including Union Pacific R. R.	121.4	269.8	7,421	81.9	1,383.6
Other Northwestern and Central Western Railways	234.2	465.5	14,524	157.8	2,663.6
Total Northwestern and Central Western Railways	474.8	915.3	31,991	294.0	4,970.5
Southwestern region	151.6	274.0	12,023	94.4	1,566.6
Western district as a whole	626.4	1,189.3	44,014	388.4	6,537.1
Total for preceding railways	1,751.5	2,558.9	128,262	916.3	15,131.2

* Excluding coal and ore roads, as previously explained.
** Includes expenses, taxes, rentals, return on investment and passenger deficiency, but omits l.c.l. clerical and handling costs.

Unit costs based on the data in Table II are shown in Table III.

Table III—Unit Costs (including investment return and passenger deficiency) Based on Table II (1928)

District, region or group of railways*	Switching and station cost per revenue carload**	Road haul cost: Per 1,000 revenue gross ton-miles	Road haul cost: Per revenue loaded car-mile (cents)	Double terminal and line cost for 300 miles: On gross ton-mile basis (55 gross tons)	Double terminal and line cost for 300 miles: On loaded car-mile basis
Eastern district	$13.86	$2.54	15.66	$69.63	$74.70
Southern region, including Richmond, Fredericksburg & Potomac	11.75	2.76	16.71	69.04	73.63
Western trunk line railways	12.48	3.01	17.57	74.63	77.67
Mountain-Pacific, excluding Union Pacific R. R.	16.29	3.70	22.27	93.63	99.39
Mountain-Pacific, including Union Pacific R. R.	16.36	3.29	19.50	87.01	91.22
Other Northwestern and Central Western Railways	16.12	2.95	17.48	80.91	84.68
Total Northwestern and Central Western Railways	14.84	3.11	18.41	81.00	84.91
Southwestern region	12.61	2.90	17.49	73.07	77.69
Western district as a whole	14.23	3.06	18.19	78.95	83.03
Total for preceding railways	13.66	2.79	16.91	73.36	78.05

* Excluding coal and ore roads, as previously explained.
** That is, for originating or terminating a carload, but not both.

It will be noted from Table III that the relation of the territories is not the same for the switching and station cost as for the road haul cost. The Eastern district is shown to have the lowest unit road haul cost but not the lowest unit switching and station cost. Hence the final index would vary somewhat according to the gross weight of the car and the length of haul chosen for comparison. It is worth while to refer again to the fact that the unit costs here given are presented for the purpose of showing the relative and not the actual cost of hauling a carload of a given size in each region.

As bearing on the question of the effect of density of traffic on cost it may be noted that the Eastern district has about twice the density of the Southern region, yet the aggregate unit cost is slightly greater in the east although the road haul cost is somewhat less. The number of revenue freight *gross* ton-miles per mile of line in each of the territories for 1928 was as follows (thousands): Eastern district (excluding coal and ore roads) 6,906; Southern region, including Richmond, Fredericksburg & Potomac R. R., 3,360; Western trunk line railways, 2,675; Mountain-Pacific, excluding the Union Pacific R. R., 2,796; Mountain-Pacific, including Union Pacific R. R., 3,397; other Class I Northwestern and Central Western railways, 3,130; total Northwestern and Central Western Class I railways, 2,928; Southwestern region, 2,790; Western district, 2,893; total of preceding railways, 3,961.

Regional Differences

Another point of interest in this analysis is the relative importance of operating cost, capital cost, and passenger deficiency in the various regions, as shown in Table IV.

Table IV (1928)

District, region or group of railways*	Freight operating expenses, taxes and rents**	Return on value of property assigned to freight	Passenger deficiency added to freight cost	Ratio of (c) to (b) (per cent)	Ratio of (d) to (b) plus (c) (per cent)
	(Millions of dollars)				
	(a)	(b)	(c)	(d)	(e)	(f)
Eastern district	1,569.0	352.5	63.3	22.5	3.3
Southern region, including Richmond, Fredericksburg & Potomac R. R.	475.7	118.4	53.4	24.9	9.0
Western trunk line railways	291.3	73.1	39.7	25.1	10.9
Mountain-Pacific railways, excluding Union Pacific R.R.	218.3	62.0	35.6	28.4	12.7
Mountain-Pacific railways, including Union Pacific R.R.	286.6	75.0	39.3	26.2	10.9
Other Northwestern and Central Western Class I railways	520.3	137.9	67.9	26.5	10.3
Total Northwestern and Central Western regions	1,029.9	273.0	143.3	26.5	11.0
Southwestern region	334.3	68.8	37.0	20.6	9.2
Western district	1,364.1	341.8	180.4	25.1	10.6
Total for preceding railways	3,408.9	812.7	297.1	23.8	7.0

* Excluding coal and ore roads.
** Including l.c.l. handling and clerical cost.

It will be noted that the capital cost is largest in relation of operating expenses in the Mountain-Pacific group and smallest in the Southwestern region. It also appears that the passenger deficiency is much more important in the west than in the east.

Regarding the use of the entire Eastern district as a unit it may be noted that the New England region might have been shown separately but this region is to a considerable extent a terminal region for the rest of the Eastern district. A cost index for the New England region computed on the same basis as the relative figures shown in Table I would be 135.9 on the gross ton-mile basis and 121.8 on the loaded car-mile basis. The average ton-miles per loaded car-mile was 20.8 in the New England region and the ratio of empty to loaded car-miles was 46.44 per cent, as compared with a carload of 27.0 tons and 58.46 per cent of empty haul in the Eastern district. The true comparison would be between 135 and 121. As bearing on the higher costs in New England,

we may note the much lighter trainload for New England roads as compared with the Eastern district as a whole.

If the method of analysis above used is applied to individual railways, it will be found that there are wide variations in cost among the railways within any one of the groups. In fact the differences in cost between railways which are ignored in the present rate structures are probably greater than the differences between the averages for groups of railways.

A reference to some of the cases in which the Interstate Commerce Commission has dealt with differences or similarities in costs as between railways or territories may be of service. No complete digest of such cases on this subject has been attempted. The language of the decisions has to some extent been abbreviated or paraphrased, to save space.

Cost as Dealt with in I.C.C. Decisions

The Moffat road was regarded as entitled to divisions based upon considerably more than a mileage prorate because of the mountainous character of the country traversed (73 I.C.C. 178, 183). Reductions in rates were held unwarranted on the Tennessee Central partly because of the sparse population, small amount of traffic, and mountainous topography with its many bridges, heavy grades, and short curves (73 I.C.C. 228, 230). In western South Dakota the sparsity of population, the light movement of purely local traffic on branch lines, the difficulties of operation, and the unfavorable operating results of the carriers, combined, were found to warrant a relatively high level of rates (74 I.C.C. 295, 305). Passenger fares of 4.8 cents a mile were justified between certain points in Arizona, Nevada, and New Mexico because of the lighter passenger travel and the difficult and expensive operating conditions (64 I.C.C. 253). The unusual operating and traffic conditions of the New England rail carriers, particularly certain portions, have been recognized by the Commission in a number of cases (78 I.C.C. 381, 384, 385). The fact that the energy expended in hauling a train 25 miles in one western mining district would move a similar train 130 miles in another district in the same time was considered in comparing rates from two competitive fields (80 I.C.C. 383, 419). Transportation conditions along the line of the Florida East Coast, particularly the sparse population and comparatively light traffic, were found to necessitate rates above the average for other parts of the country (83 I.C.C. 207,210). Operating conditions across the Rocky Mountains from Salt Lake City to Colorado common points were found extremely difficult, especially over the Denver & Rio Grande Western, and not fairly comparable with the conditions encountered by the prairie lines operating east of the Rocky Mountains between Missouri points and the Colorado common points (87 I.C.C. 170, 178).

Transportation conditions in Illinois are not materially different from those in the territory east of the Illinois-Indiana State line and a lower level of rates in Illinois than in central territory generally is not justified (129 I.C.C. 392, 394). It was held that within southern territory there should be a uniform level of cement rates, leaving out of consideration the rates to and from the Florida peninsula (132 I.C.C. 427, 455). The transportation conditions were regarded as more favorable in official than in southern territory (128 I.C.C. 567, 575). The traffic density is lower and rate levels are higher, and the operating expenses proportionately higher in the western than in the southern districts (95 I.C.C. 385, 402).

In a case dealing with livestock rates in the territory between the Missouri River and the Pacific coast, a uniform scale was not approved in the territory described as follows:

> The great territory covered by the complaint presents the widest variations in operating and transportation conditions. It embraces the arid deserts in the Southwest with their extreme heat, and the northern tier of states where long severe winters with very low temperatures are the rule; it embraces level plains and the highest mountain ranges; it includes relatively thickly settled sections and the most sparsely populated areas in the country. It includes points between which livestock may move once and never again, and other points between which there is a large and regular movement, served by prosperous lines of railroad carrying a large volume of profitable traffic, and by other lines of which the contrary is true. (112 I.C.C. 197, 203-4.)

Although transportation conditions have changed materially, they are nevertheless more favorable in Western Trunk line territory than in the Southwest, more particularly with reference to density of traffic. However, conditions vary in the different parts of western trunk line territory, and appear on the record to be considerably more favorable in Illinois than in the other states included in that region. They grow continually less favorable from east to west. The cost of operation per ton-mile, including all expenses, charges, and a fair return on investment, in all probability does not average as much as 20 per cent higher in the southwestern than in the western trunk line group (148 I.C.C. 457, 477-8).

Cost of construction is heavier and operating conditions are more severe in trunk line than in central territory due to the mountain ranges which traverse the former; but this disadvantage of the trunk lines is probably fully compensated by their greater traffic density. Considered as a whole, the evidence is persuasive that, with certain exceptions, rates on manufactured steel should be on a uniform level throughout official territory (155 I.C.C. 517, 562-3). Transportation conditions in the Southwest warrant a uniform scale of class rates throughout Southern Missouri, Oklahoma, Arkansas, Western Louisiana, and common point territory in Texas (98 I.C.C. 183, 196).

While it is undoubtedly true that operating conditions are more difficult and traffic density less on the Bangor & Aroostook than on many other railroads within Zone I, nevertheless this fact in and of itself would not justify applying to the express traffic moving in whole or in part over that line a different and higher basis of rates than is in effect over other lines in the same zone (63 I.C.C. 452, 453).

* * *

At Cotter, Ark., on the Missouri Pacific

System in the Division Office

The proper filing of instructions and correspondence and the tabulation of statistics are essential

By Clell G. Cannon

Division Accountant, Minneapolis, St. Paul & Sault Ste. Marie

WHILE general offices in the operating department have been alert to new business methods and quick to adopt them, division offices, in many cases have been indifferent or slow about making changes in the old haphazard methods of office management and the assembling and filing of statistical records. It is of the utmost importance that accurate and intelligible records be kept, especially by division offices, where the information is available at its source.

A Book of General Instructions

The first requisite in carrying out systematically and effectively the work which comes under the immediate direction of the division superintendent's chief clerk is a book of instructions. The superintendent's office from time to time is the recipient of instructions, many of which are issued currently by superior officers and often covering specific cases which are to apply to the handling of all future cases of a like nature. It is not enough to file these in the regular filing system and index them, where they become buried in a mass of correspondence. In such cases, the office must depend upon the memory of the chief clerk or the filing clerk to recall the circumstances, and then recover the instructions, if they are remembered. In case the office employees change, everybody, including the superintendent, is puzzled as to the correct manner of handling specific cases. Moreover, a few employees labor under the impression that it increases their importance to keep secret all matters of instruction. This is a delusion and a grave mistake. Every office should be organized in the simplest way, so that instructions are always available to the new man as well as the old, and the old man will do his work more efficiently if he has his instructions preserved in such shape that he can have them at his finger tips on a second's notice.

The book for this purpose should be loose-leaf of the post-binder rather than the ring type, inasmuch as the post style is capable of making a larger and neater book and the leaves do not tear so easily with constant use. It should contain instructions upon every subject, regardless of source, and it should be completely and currently indexed. There are several ways in which the contents of the book may be arranged but probably the most satisfactory way is to divide it into subjects, assigning to each subject a series of numbers. As an example, the pass section will contain all instructions issued relative to trip and annual passes. Assume that instructions have been issued limiting annual passes to dependent children under 15 years of age, and that pass instructions have been assigned numbers 501 to 600 inclusive. The last instruction filed is number 543. The new instruction will be numbered 544 and will be indexed under the following heads:

Passes, age limit for dependents on annual passes.
Annual passes, age limits for dependents.
Dependents, age limits for annual passes.

It will readily be seen that when any question arises relative to the age limit allowed for dependents on passes, the information will be immediately available.

In case previous instructions conflict and of necessity are superseded, the old instructions should be removed from the book, or marked "Superseded by instruction number ——." A rubber stamp could be provided for this purpose, or the words typed on one corner of the instructions when filed.

If the original instructions are issued in the form of letters, it is not always necessary to file the entire letter in the instruction book. The gist of it may be recopied for the instruction book and reference made to the letter file. A record should be made in the regular letter file of all letters placed in the instruction book.

Some years ago a passenger died on one of the company's passenger trains. The superintendent was notified by the conductor of the train, and the division office recalled that about a year previously instructions had been issued covering such cases. Because the approximate date and the name of the official issuing the instructions could not be determined, the train arrived at its terminal before the information could be located. A book of instructions would have yielded the information immediately.

It is not necessary to list the various subjects which the book should contain. Any chief clerk or file clerk should be able to prepare a list best adapted to the needs of his own office, with a miscellaneous section to contain any items not obviously coming under a general topic.

Aside from the book of general instructions there should be a separate book for any subject involving a large volume of rules and interpretations such as the schedules of agreement with various labor organizations. This book should have the following divisions:

1. Clerks, freight handlers, etc.
2. Dispatchers.
3. Agents and operators.
4. Maintenance of way and structures employees.
5. Trainmen.
6. Enginemen.

The articles and sections of the schedule may be retyped on separate pages, or clipped from the printed schedule and mounted on loose leaf pages of letter size. Any changes or interpretations of these articles and rules may immediately follow the article in question, so that in referring to any portion of the schedule all the rulings are immediately available. A system of this kind makes the most complicated and frequently-revised schedules always up-to-date and complete, and its use would reduce to a minimum the penalty payments superintendents are called upon to approve and which are often occasioned by misunderstandings.

An Information Book

Every item of information required for the intelligent supervision of a division should be available in a form that can be amended without unnecessary labor.

The information book should contain such items as construction dates of the railroad, rail and tie classifications, engine ratings and equipment cost summaries. Each station on the division should be provided with a separate page showing the name of the town, industries, population, rail facilities, number of railroad employees, rates of pay, hours of service, stock yards and other facilities. Under stock yards the information should show the size and number of pens, whether water is available, whether scales are installed and their ownership. It should list elevators, names and capacities, and there should be a small sketch showing the location of the carrier's properties, and industries. The book should list joint facilities, with a brief synopsis of agreement, date and file number of contract, AFE number and kindred information. These subjects indicate the nature of the book. It should permit the superintendent to have any information relative to the division at his finger tips. If called upon to approve a requisition for a baggage truck at a particular station, for example, the superintendent can refer to his book, ascertain how many trucks it already has, determine the volume of business from the book of statistics and act upon the request in an intelligent manner.

Statistical Data

The book of statistics, the most important kept in the superintendent's office and the one most frequently used, covers all statistics necessary for a division office. It is not intended to replace any of the special reports, but rather to contain the important facts and figures which the various reports disclose.

The method of compilation of the statistics is largely a matter of choice or convenience, but they should be posted periodically as soon as available. A section for each natural division of expenditures and revenues, maintained for five- or ten-year periods, enables the supervisory officer to detect any fluctuation in expenditures or revenues from month to month and from year to year.

The information for each station should be shown on the station monthly business report—the number of employees, salaries, tonnage, number of cars of commodities, ticket sales, etc., by months and years. The superintendent can thus investigate causes for declines in business, particularly at competitive stations, watch business conditions so that extra labor may be discharged and additional labor may be employed, etc. The costs of maintaining the sections, dispatching trains, offices, etc., should be shown on separate sheets. The book should also include, among other subjects, charges to operating accounts; tie renewals; costs of renewals; addition and betterment work, including patch ballasting, relay programs and the installation of track appliances; budget figures; overtime and penalty payments; ditching and weed burning costs; average agents' compensation; tonnage and locomotive performance statistics and loss and damage claims. While experience will be the best guide in building up the book of statistics, its purpose is to maintain in a permanent, compact and convenient form all the statistics which the superintendent should have at his immediate service.

A Book of Instructions for Dispatchers

Some railroads find it most satisfactory to maintain a book of instructions for dispatchers for the orderly indexing and filing of instructions in the same manner that they are handled in the superintendent's office. This book, however, will be much more limited in scope and the instructions can be numbered consecutively as issued, the subject being indicated at the top of the instruction sheet for reference to an index. A space may be provided on each instruction for the signature of the dispatchers acknowledging their contents.

The division accountant should have two books for filing his instructions, one for "A" and "B" work and another for general accounting instructions issued by the auditors of disbursements and capital expenditures. Uniformity will be gained and labor will be saved if the instructions are issued at the general offices in a uniform style and numbered and indexed before being sent to division accountants, who can place them in their proper position in the book and enter the index reference.

The timekeeping department, in addition to the books of schedule instructions and interpretations, will find it advantageous to maintain a uniform indexed instruction book.

A Consolidated Filing System

The superintendent's office should have one filing system and one set of indexes with all material filed by the various departments passing through the hands of the filing clerk. Probably the best filing system for a superintendent's office is that employed by libraries where each book is given a general and a specific number. The superintendent's office should contain as many files as are necessary to segregate the material into proper divisions, each subject bearing a number and each letter under the division being given a consecutive number. As an example, the file for loss and damage claims may be numbered 100. The first letter in the file will be 100-1, the second 100-2, and so on, the first number representing the general and the second, the specific. All files which cover two or more subjects should be placed in the most appropriate file and the indexes of the other files noted to that effect. There will be an index card for each subject file and each letter will be listed consecutively by number, with a brief line of description immediately following, so that upon reference to the card, the file number can be located. Care should be taken to index all letters both as to the sender and the receiver, and the subject under as many heads as necessary in order to facilitate subsequent location.

It might be advantageous for the railroads to adopt a uniform system of file numbers. A printed list could be issued with the various subjects and subject file numbers in much the same manner as the books issued by the Interstate Commerce Commission giving account numbers and indexes. Such a system is in use by the War Department for filing its records.

The entire force of the superintendent's office should meet regularly at stated intervals for study and instruction relative to phases of their work and general railroad information. Papers should be given by employees, and talks made by experts in various lines of railroad activity. The reading of articles in railroad magazines should be encouraged, as well as other literature dealing with public relation problems and railroad legislation with a view to their discussion at the meetings. In this way office employees would be better fitted to meet the public as intelligent representatives of their employer. Meetings of this nature give employees an added interest in their work, and contribute to loyalty and efficiency in a positive way.

SINGLE ROOM SLEEPING CARS are to be run by the New York Central, beginning June 29, through between New York and Chicago on the Twentieth Century Limited; also on the Cleveland Limited from New York to Cleveland, and the Ohio State Limited from Cleveland to New York.

An Englishman Looks at Railways of the United States*

Examining governmental influence on transport in both countries, he concludes English conditions are preferable

By R. Bell

Assistant General Manager, London & North Eastern

LOOKING back over the past ten years the general trend of the transport policy adopted by successive British governments does not appear to have been far wrong. A fairly even balance has been held between rail and road and water carriers. Inequalities in treatment do exist, but many of these differences may soon be eradicated. The subtle influence of public opinion nearly always leans to the side of fair play. Without its silent pressure the railways might not have obtained road and air powers so easily as they did last year. We are apt to forget that the general feeling of the country goes far to mold the views of committees, just as it tempers the decisions of tribunals and prompts the action of government departments. There is also a certain degree of sweet reasonableness about our ways of administration. This is a possession of great price, not shared by other countries. With us, public departments and tribunals are not prone to bring hornet's nests about their ears. So far from attempting to usurp authority, they are often reluctant to exercise their statutory powers to the full. They are content as a rule to watch developments so long as these are not running contrary to any cherished principle. When they do interfere, they may usually be said to advise or direct rather than to dictate. They like people to confer about their differences, and, as the outcome of a frank discussion, to propound terms of settlement which can receive an official blessing. If there is nothing heroic about this procedure, it is marked by a great deal of common sense. We can see how well off we are by turning to America.

The Commission's "Fostering Care"

Carriers of all classes in the states come under the "fostering care" of the Interstate Commerce Commission. The word "just" appears 48 times in the act constituting this body and the word "reasonable" 66 times. The commission employs 2,100 people in a maze of activities which its chairman said recently were "designed to insure that in the world of transportation there be fair play and just equality of opportunity between persons, commodities, localities, and that there be maintained a system of transportation that is adequate in service and safety to our national needs." A pretty tall order when we recall that America is 35 times the size of Great Britain, has 242,000 miles of Class I railroads, 24½ million road motor vehicles and 18,000 miles of navigable waterways. One would imagine that the commission should govern with a loose rein that it may govern at all. Actually its interfering hand seems to be everywhere. It has never been troubled by many qualms about its own omniscience and has recently shown signs of aspiring to omnipotence. Last October the Supreme Court of the United States was asked to decide whether the commission had power to compel the Sante Fe, the Southern Pacific and the Los Angeles & Salt Lake to construct a new joint passenger station in the place of the three existing terminals at Los Angeles. The court ruled that the commission had no jurisdiction, but will apparently soon have to say whether a command to build a new line holds good. The Commission towards the end of last year issued an order requiring the Oregon-Washington Railroad & Navigation Company to construct 185 miles of line from Crane across the center of the state of Oregon to a connection place with the Southern Pacific at Crescent Lake.

Unfettered Government Authority

It passes the comprehension of the plain man to grasp how any executive tribunal can persuade itself that it has unfettered authority to require a common carrier to raise and expend capital on an enterprise which is right outside the scope of the original undertaking. Admittedly the Commission can prevent a railroad from building a new line by refusing it a certificate of public convenience and necessity. After the line has been built, the Commission regulates the charges collected by the carriers and can call upon them to provide adequate facilities. In the empowering act occur the words "and to extend its line or lines." Most of us would construe this clause as covering additional track or sidings needed for the efficient carrying on of the original railroad within the district which it served. Not so the majority of the commissioners, who think it is clear that they can force a railroad to build a new line against its wishes. Luckily for the railroad shareholders a clause in the American Constitution states that no government agency can take away property of private individuals without due process of law, and the view of the commissioners will doubtless be held to be unconstitutional.

The Interstate Commerce Commission has in its 43 years of existence removed many abuses. It has given stability to the system of rates and charges. It has brought in a uniform accounting code. It has done much to insure the safety of railroad servants and of the traveling public. But it seems to aspire to be a managing instead of a regulating body. Its heavy hand meddles perpetually with details of traffic operation.

* Abstract of a paper read at a meeting of the York (England) Railway Lecture and Debating Society, January 28.

Questions which in this country would be settled by the railway companies in conference at the Railway Clearing House are, in America, handled by one or more of the Interstate Commerce Commission's examiners.

The use of containers will illustrate the difference in practice. When containers were introduced in 1928 on our railways, there were sharp differences of opinion about their utility and also about the regulations for supplying them. These differences were straightened out at the Railway Clearing House and a scale of charges was agreed upon for general application. The new facility has been greatly appreciated by the public. Improved types of containers have been adopted for special traffics and arrangements have been settled for shipping containers to the Continent. All this without the intervention of a single government official.

In America containers have been used mainly by the eastern railroads, such as the New York Central, the Lehigh Valley and the Pennsylvania. The innovation has reduced the cost of handling less than car load freight and has been welcomed by the forwarding agents who had previously to try to collect car loads of small packages. Trouble arose last year over the rates charged and an examiner of the Commission was deputed to report on the desirability or otherwise of the container service. He found that high classed commodities could be sent more cheaply in containers than in car loads at their class rates. This anomaly would, he considered, disturb business throughout the country and play havoc with the existing rate grouping. In his opinion the container rates are not only inexpedient but actually illegal. The railroads appear to have brought down the judgment of the Commission on their own head by adopting for goods in containers a system of flat rates per ton mile, which cut right across the classification.

English Judge Container Service on Merit

In this country the railways took the view of the examiner that the container should be able to sell itself to traders on its own merits. In return for the savings in packing and in immunity from damage, differential charges were put in force varying from 5 to 33⅓ per cent over and above the ordinary rates. If a trader doesn't like this scale, he needn't use our containers. Actually the new institution is highly popular. The London & North Eastern started by building 450 containers and will soon have a stock of 685. Between 400 and 500 containers are handled each month at King's Cross (London) goods station alone and a mobile electrical crane has been installed for lifting them. New types of containers are being tried and without any fuss the device has become part of our general operating equipment.

In America, by way of contrast, there is a further cause of strife over a proposal to extend container service from the eastern area to the West and Southwest. The Missouri-Pacific, a "go-ahead" railroad running from St. Louis into some of the cotton, grain and fruit growing states, is all for containers. Other carriers are hostile, pointing out that 80 per cent of the westbound cars are empty so that less than carload freight can be lifted by cars which have to go west in any case. The tonnage of "smalls" originating on each mile of western railroad is only about a third of the quantity on a line like the New York Central. On these grounds the Interstate Commerce Commission is asked to decree that container services should not yet be extended to the western states. To our way of thinking any such move would seem to be almost in restraint of trade and one wonders whether the energy of the Commission should not be directed to regulating the rates charged for the use of containers.

Regulation by States

Within the separate states the American railroads have another set of masters in the public utility commissioners. Some of the cases referred to these authorities would be settled here by our traffic officers on their own responsibility. In New Jersey the commissioners recently granted a petition of the Lehigh Valley railroad that West Portal station might be run without a separate agent, but ruled that Royce Valley must be in charge of an agent. The company pointed out that the receipts at the second station came largely from the business of two manufacturers. If these traders were allowed credit, the agent would have little or no work to do. But the commissioners don't pay his wages and so the reasoning leaves them cold. We have the wit to leave the railways to run their stations as they judge best. On the London & North Eastern alone there are 476 cases where two or more stations have been put in charge of one supervisor since amalgamation. A saving of £88,000 (about $430,000) a year in salaries has been realized and not a single complaint has reached headquarters about the altered arrangements. Imagine the circumlocution and delay if all these cases had perforce to be justified to a public tribunal.

Texas, of all states, supplies another recent instance of expense being thrown on the railroads to satisfy a pedantic interpretation of a law which requires a crew of four on each train. The state attorney-general has held that the law applies to rail motor cars and the railroad commission has ordered the railroads to carry superfluous staff. The ruling may please a short-sighted union of trainmen, but is bound to add to operating costs and may stifle the development of railcar services. In the long run that cannot benefit the public and again it is gratifying to find that our railways have a freer hand in running rail coaches than the Santa Fe or the Rock Island. How one gets disillusioned as one grows older! The Texas of our boyhood's literature had a short and sharp way of dealing with attorneys who were rash enough to form inconvenient opinions.

While economical operation is seriously hampered by state requirements, the weight of taxation pressing on the American railroads is four times as heavy as it was 17 years ago. Last year's taxes amounted to about 415 million dollars. That sum is more than six per cent of the gross revenue and would buy all the locomotive fuel consumed by the railroads.

To make matters worse, perpetual pressure is put on the railroads to reduce freight rates. Since the passing of the Transportation Act in 1920 the general trend of freight rates has been downward and the companies have never earned "the fair return" of 5¾ per cent on the value of their property which is allowed to them under the Transportation Act. Politicians have a weakness for believing that a struggling industry can always be helped by cutting freight rates on its produce. In this spirit Congress passed the Hoch-Smith resolution which requires the Interstate Commerce Commission to make an investigation of the whole rate structure and to effect "such lawful changes" as will promote the movement of agricultural products affected by depression. The Commission has proceeded to quote rates in the case of deciduous fruits from California to eastern towns, which the carriers say do not cover their costs. On the other hand, the Commission has not raised rates on high class commodities in order to offset the loss

to the carriers. So once more the protection of the Supreme Court has been invoked.

In the meantime an experimental cut made in wheat rates last year would not appear to have benefited the farmers. At the request of President Hoover, the railroads voluntarily reduced their charges between May and September in the hope of moving a large surplus of grain accumulated on the farms and in elevators. The upshot was that the world price of wheat quickly declined and foreign consumers profited at the expense of the American railroads. Supply and demand were found to determine the price of wheat in the United States and not transport costs to Liverpool and other importing centers. Economic forces are still stronger than presidents.

English Railway Taxation Burden Lessened

Great Britain has steered clear of this sort of arbitrary interference with the principles on which our rail rates have been built up. The "de-rating scheme" of the last government merely financed the railways to the tune of 75 per cent of their local taxation so that they could pass on the subsidy to agriculture and to the coal and iron and steel industries in the shape of rebates from the existing freight charges. The policy of the subvention to the selected industries may be wrong, but neither the railways nor other trades are prejudiced and they will all stand to gain if the plan prospers. The burden of direct taxation on our own railways diminished by 12 per cent between 1925 and 1928, whereas the cost of social services increased by 18.6 per cent. The London & North Eastern alone paid £196,000 (about $955,000) under the Health Insurance act in 1925 and £349,000 (about $1,700,000) under the Health and Pensions Insurance schemes in 1928—an increase of £153,000 (about $745,000). Fortunately our company's payments for Unemployment Insurance fell, over the same period, from £156,000 (about $760,000) to £124,000 (about $605,000) but the measures passed last session are sure to involve an increase in our taxes bill and, the steeper the increase is, the more remote becomes the prospect of an all-round reduction in rail rates and dock dues.

In one other respect we are more fortunate than our brother railwaymen in America. We don't live under a government with an aggressive waterway policy. America is already spending £17,000,000 (about $83,600,000) a year on modernizing her waterways and proposes to spend a further four millions annually. The Mississippi is to be deepened and its floods controlled. A thousand miles of canal are to be built in ten years. The Great Lakes are to be kept at a constant level and harbors everywhere are to be improved. These schemes, according to President Hoover, will show economic justification. He omits to define this term and his critics point out that "rates for service over artificial waterways do not cover the total cost of the service. They merely constitute a partial payment for the movement of traffic and the total cost of the service can be determined only after operating deficits have been paid from tax funds." That explains why, in America as in our own country, private capital will have nothing to do with canals. Except under special conditions, such as have made the Manchester Ship canal self-supporting after many years of loss, canals cannot earn a profit. America has so many unprofitable canal enterprises to show already that we needn't be at all ashamed of our Ripon and Boroughbridge navigation. Why she should propose to spend her resources on waterways which can often only subsist by taking traffic from the railroads is passing strange. Her President might have erected a more enduring monument to himself by developing air services which can hardly extend systematically without state aid and will not compete seriously with other forms of transport for many a long day.

Water Subsidies Reduce Rail Rates

A government subsidy given, directly or indirectly, to inland waterways, or coastwise shipping, or road transport, almost inevitably tends to force down rail rates. Traders will complain to the end of time about the level of rates, but the force of their grumbling weakens as the service which they get for their money improves and on all sides it is agreed that the railroads excelled themselves last year. E. E. Loomis, president of the Lehigh Valley, calculates that the railroads convey more than 80 per cent of the total freight moved in the States and calls the railroad system "everybody's partner" in carrying on business. An independent observer in the person of the Secretary of Commerce appraises the value to the public of railroad efficiency in one or two terse sentences! "Shortages of cars have now become rare occurrences. At present it takes scarcely two-thirds as long to move goods a given distance as it did a decade ago. With the increasing efficiency with which traffic is being handled, producers are able to carry smaller stocks and to turn over their capital more quickly. As a result goods are cheapened to consumers."

Measured by ton-miles, the freight traffic of 1929 was a record but passenger business declined in volume by nearly 1½ per cent. An operating ratio of 71.4 per cent speaks for economical management. The London & North Eastern figure, you may remember, is over 80. Yet the American railroads earned less than five per cent on their investment. They have been spending money liberally on betterments of all sorts since 1922 and they propose, at the instigation of President Hoover, to go on with plans involving an expenditure of $1,200,000,000 this year in spite of a drop in freight carryings since the stock market collapsed last October. The President hopes that their action will stimulate business again, for the railroads make the enormous contribution of close upon six billion dollars a year to the resources of the people in the shape of capital expenditure, purchase of stores, and payment of wages, taxes, interest and dividends. The railroads use one out of every four tons of bituminous coal raised in the States, one out of five tons of the timber cut and 16 per cent of the iron and steel produced. Clearly any state action which cripples railroad credit will do harm. As General Atterbury, president of the Pennsylvania, has said: "The public interest in railroads is bound up in . . . adequate credit—namely, the ability to earn enough to pay a fair return on the money already invested in them and to attract new capital for expansion and improvement."

Since the war the American railroads have passed through exactly the same phases as our railways. Road transport has developed more quickly in the States and in the United Kingdom than on the Continent and conditions in the densely populated eastern states are fairly comparable with our own surroundings. If we have nothing to match America's lakes and rivers, our long and indented coastline gives the steamship owner his chance to compete with rail and road in most of our manufacturing areas. The two governments have thus to handle many transport problems of a similar

nature, though on different scales. Should we be better off under the methods of Washington? The answer is emphatically in the negative. We often talk about government restrictions, but really we are free as air in comparison with our brother railwaymen across the Atlantic. We ought to show our joy by redoubling our efforts to make the most of our liberty. By increased efficiency, let us impress upon the traveling and trading public that the railway companies, whether operating on rail, road or sea, are "at their service" as the London & North Eastern claimed to be in the first pamphlet which advertised its facilities to the world in 1923.

Accidents Investigated During October

ACCIDENTS investigated by the Bureau of Safety of the Interstate Commerce Commission in the month of October, 1929, number 13; six collisions, six derailments and the wreck of a track motor car by a locomotive, causing the death of four trackmen. Herewith are abstracts of the Bureau's reports on these accidents:

Baltimore & Ohio, Rockville, Md., October 23, 3:30 a.m.—A track motor car which had just been placed on the westbound main track and was being pushed by hand eastward, was struck by a locomotive, coming from the west, tender first, and the motor car was demolished. Four trackmen were killed and three injured. The locomotive was moving east on the westbound track by special order, being destined for Garrett Park, four miles east of Rockville, to assist a disabled freight train. It had a headlight on the tender. The trackmen had been called out for special duty at a point where the track was obstructed near Georgetown. Foreman Coleman, who was held responsible for occupying the main track without authority and without protection, said that when he arrived at his tool house, he found there, ahead of him, Foreman Selby, foreman of another section, and assumed that Selby had obtained necessary information about trains from the east. When the locomotive approached from the west, the men who heard it thought it was train No. 12 then due on the eastbound track. The inspector finds disobedience of the rule requiring a constant lookout to be maintained when moving track motor cars and also of the rule requiring the display of white and red lights. The report said that the rules were adequate for the occasion and that if they had been observed, the accident would not have occurred.

Collisions

St. Louis-San Francisco, Wilson, Ark., October 15, 7:05 p.m.—Northbound passenger train No. 822, moving at from 10 to 20 miles an hour, collided with freight cars standing on the main track, south of the station, and 16 passengers, three trainmen and one other person were injured. A southbound freight, entering the side track for the purpose of meeting the passenger, was obliged to push forward 56 cars, standing on the siding, and, because of bad management, the leading car of this string fouled the main track. The brakeman who should have flagged the passenger was unable to do so because he had nothing to do this with, except two fusees, both of which he had used up before the passenger train arrived. He had forgotten to take with him a red lantern. The report, filling nine pages, tells of a remarkable succession of blunders. This brakeman was one of only three weeks' experience; the brakeman between him and the engineman who should have transmitted hand signals, was making his first trip, and the conductor had been promoted from brakeman only two days before. It appears that on account of an unusual amount of business the superintendent had had great difficulty in finding enough men to man his freight trains, 56 new men, 30 of them inexperienced, having been taken on within one month. The engineman of the freight, who should have furnished the brakeman with a red flag and a red light, said that at the time he handed out the fusees, he thought the red lantern would not be needed. There was a large amount of conflicting testimony as to what hand motions were made. The conductor, the only experienced man in the train crew, is censured for giving his personal attention to the rear of the train instead of to the operations at the front.

Boston & Maine, Nahor, N. H., October 16, 11:49 a.m.—Eastbound freight train extra 1446, consisting of one locomotive, one freight car and a caboose, left Peterboro on the time of the second section of westbound passenger train No. 8122 (which section was a local freight train of a locomotive, three cars and a caboose) and collided with it, making a bad wreck. The engineman and fireman of the westbound train and the engineman of the eastbound were killed and six employees were injured. The conductor of 1446 neglected to check the train register before departing from Peterboro and thus was ignorant of the fact that the passenger train carried green signals. He had seen the passenger train, a single gasoline motor car, standing near the turntable, after the green flags had been taken down, and thus deceived himself. The conductor, when he should have been examining the train register, was more concerned in a conversation with the operator about some other matter, and did not grasp the statement of the operator, which had been made at the request of the dispatcher, to remind the conductor that there was a second section of the passenger train. The report says that the operator erred in not firmly impressing on the conductor's mind the oral instructions given by order of the dispatcher; "he made a somewhat feeble attempt to carry out his instructions but was not thoroughly alive to the situation or particularly energetic in attending to his own duties properly. A little more co-operation on his part might have prevented the occurrence of the collision."

Atlanta & West Point, East Point, Ga., October 23, 9:49 a.m.—Eastbound passenger train No. 18, of the Central of Georgia, moving at about 15 miles an hour, ran over a misplaced switch and collided with a work train which was switching on a side track; and four passengers and one engineman were injured. The switch at which train 18 left the main track had been opened directly in front of the train by a brakeman of the work train, although the passenger train was already within about 1700 ft. on a straight line, having passed an automatic signal, that distance back, before the switch was turned. The brakeman was setting the switch a minute or two before it would be needed, so as to save a little time; and he assumed that no train was approaching on the main track because, having misread his watch, he thought it was 10:46 a.m. when, as a matter of fact, it was 9:46. After seeing the passen-

ger train he tried to close the switch but was too late to do so.

Missouri Pacific, Collinston, La., October 27.—Southbound passenger train No. 105 ran into the rear of a preceding freight, within yard limits, wrecking the caboose and resulting in the injury of 68 passengers. The flagman of the freight is held mainly at fault but the engineman of the passenger train did not properly control the speed of his train (about 4000 ft. inside yard limits) when he had an order under which the freight had been authorized to run ahead of the passenger train for 65 miles or more. The flagman of the freight was a new man, though he had had some experience elsewhere. He went back only about 500 ft. when he had ample time to go farther, and he had been specially instructed by the conductor. However, he had told the conductor that he was not 100 per cent qualified and (assuming that the brakeman's statement is correct) the conductor is held inexcusable for not more carefully watching the flagging himself; and the report holds it questionable whether the officers of the road had taken sufficient care in ascertaining the flagman's qualifications. Moreover, there were two other brakemen on the freight who had had 16 years' experience. The passenger train being on a curve turning to the left, the fireman is held responsible for not having kept a better lookout, as he might have seen the caboose a long distance before reaching it.

Fort Worth & Denver City, Memphis, Texas, October 30.—A southbound freight train (waiting for a northbound passenger train) being too long for the side track and having gone too far forward, was being backed into the side track when northbound passenger train No. 1, traveling at 35 or 40 miles an hour, collided with it, wrecking both locomotives and overturning one of them. The engineman of the passenger train was killed and seven passengers, one porter and five employees were injured. The responsibility is placed on Brakeman Avery of the freight, who was ordered to flag the passenger train, but did so ineffectively. He had nine minutes in which to go out, but was so anxious to be near the switch (after the passage of the passenger train) that he went only a short distance. He was a man of only four months' experience and became panic stricken when he found that the passenger train was close upon him. The engineman of the freight, who ordered the brakeman to go out, is criticised for not seeing that his instructions were carried out. The engineman of No. 1 had been in apparently normal health and the inspector cannot decide why he did not see either the headlight of the freight or the fusee which the brakeman had lighted.

Missouri-Kansas-Texas, Savonburg, Kan., October 31, 6:08 p.m.—Southbound fourth-class freight train No. 99, the regular local freight train, about four hours behind time, was struck, while standing at the station, by a following freight, extra 868; and the locomotive of the latter was overturned. The engineman and fireman of 868 had gone back to ride in the air-brake instruction car, behind the engine, and the place of the runner was taken by road foreman of engines Tierney and Fuel supervisor Wyant; and the road foreman is held responsible for the collision. This man, together with the mechanical engineer, who was on the locomotive and one brakeman were injured. The local freight had an order permitting it to stand at stations without being protected by flag against following extra trains, and a copy of this order had been delivered to Tierney; but it appears that this and other orders were not carefully read by him, if read at all, and his only explanation of his neglect to reduce speed approaching Savonburg was that he had forgotten.

Mr. Wyant was riding on the left side of the cab and says that he was watching the road foreman closely, expecting momentarily that he would reduce the speed, which was over 40 miles an hour. The report contains a long account of discussions concerning the use of train orders to avoid the necessity of flagging and as to what length a train is protected by such an arrangement. The road foreman had known about the protecting order at a station some distance back but that was more than seven hours prior to the time of the collision. The inspector holds that the other men in the cab, who knew of the order, should at least have said something about the presence of the local freight train ahead of them; these men had this fact in mind while Tierney evidently had not. If the use of this form of order is to be continued, it is important that all concerned understand how much protection it gives. The habitual use of a train order to relieve a local freight train from flagging is believed to have led to carelessness about flagging under other circumstances.

Derailments

Louisville & Nashville, Crab Orchard, Ky., October 4.—Northbound passenger train No. 24, consisting of locomotive No. 402 and nine cars, was derailed by a broken rail while traveling at about 25 miles an hour, and three cars were overturned and fell down a bank. Eighteen passengers, three porters and two employees were injured. The rail which caused the wreck was found broken in several pieces, and there were two transverse fissures, one of which evidently had existed for a considerable time.

Cleveland, Cincinnati, Chicago & St. Louis, Ivorydale, Ohio, October 15.—Westbound passenger train No. 15, consisting of locomotive 6520 and ten cars, moving at from 40 to 60 miles an hour, was derailed at a misplaced switch and the locomotive was overturned. The fireman was killed and the engineman injured. A motor car and trailer belonging to the Western Union Telegraph Company, operated by that company and in charge of a pilot of the railway company, had been occupying the main track and had just entered a siding; and carelessness in the management of this car, using the main track too long, without flag protection, was the reason why the switch was not set straight in season for the passage of the passenger train.

Louisville & Nashville, Walton, Ky., October 24.—Southbound passenger train No. 7, consisting of a locomotive and nine cars, traveling at about 30 miles an hour, was derailed by striking a motor truck on a highway crossing, and the locomotive was overturned. The engineman, the fireman and the operator of the motor truck were killed and one passenger and one other person were injured. The motor truck entered upon the crossing directly in front of the train. Witnesses testified that the locomotive whistle was properly sounded and that the motor truck was driven on to the crossing without being stopped. It appears evident that the driver did not see or hear the train although he could have had a good view of it for 2300 ft. and a full view for 700 ft. The driver lived at Walton and was well

acquainted with the locality. There was a wigwag signal at the crossing which, so far as can be learned, was in good order, though there was no direct evidence that it was operating at the time of this disaster.

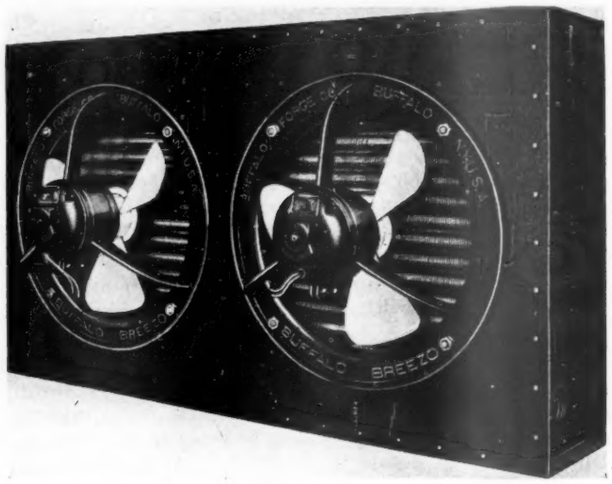
Pennsylvania, Iron Hill, Md., October 25, 5:55 p.m. —A northbound freight train consisting of one leading locomotive, 106 cars, a caboose and a pushing locomotive, was stopped near Iron Hill for the purpose of setting out a car which had a hot journal; but when the stop was made, the fifty-third car in the train, Reading box car 15444, buckled toward the east and caused the fifty-second car to be pushed to the west, afoul of Track 2; and on Track 2, northbound passenger train No. 148, moving at 60 or 70 miles an hour, ran into the obstruction. The engine truck wheels, the tender and all of the cars, ran off the rails, but the driving wheels of the locomotive remained on the track and the engine continued to work steam for nearly a quarter mile. The track was torn up for that distance. The engineman was killed and the fireman, dining car cook and 23 passengers were injured. The report finds conflicting evidence as to how the freight train was brought to a stop. The engineman said that he did not apply the brakes, although the brakeman at the nineteenth car, which was to be cut out, said that he gave a stop signal and that he heard the brakes go on. The conductor and the runner of the helping engine observed a drop in the pressure in the brake pipe. In any event, however, all the evidence showed that the stop was made very smoothly and without any indication that there had been any damage to the train. Therefore, no one attempted to stop the passenger train.

New York, Chicago & St. Louis, Dean, Pa., October 25, 7:53 p.m.—Westbound third class freight train No. 37, second section—70 cars and a caboose—seven hours and 33 minutes behind time, encroached on the time of eastbound second class freight train, No. 52, second section—68 cars and a caboose—and was run into by the latter. The engineman and fireman of the eastbound train were injured. All the members of the crew of No. 37 appear to have been aware that they were using the very last minute of the time allowed to reach Dean and, moreover, they were violating the rule requiring them to clear the opposing superior train five minutes. No 37 allowed only 13 minutes to run about 11 miles, where the schedule allows 56 minutes. The report calls attention to an admonition addressed to the road in March, 1929, on another occasion when the five-minute clearance was encroached upon, and the officers of the road are called upon to give their attention to the rigid enforcement of rules. On both this and the former occasion the volume of traffic was found to be such that the block system ought to be used. In another case, that at Swanville, Pa., June 13, 1928, it was found that passenger train movements were protected by block signals but freight trains were not, and the report called for the operation of the block system for all classes of trains.

Southern, New England, Ga., October 29, 6:15 a.m. —Southbound passenger train No. 43, moving at about 20 miles an hour, was derailed at a defective switch, and the locomotive and three cars were overturned. The fireman was killed and four passengers and one mail clerk were injured. Two freight cars on the side track were wrecked. The automatic block signals on the line were temporarily out of service and the train was moving under a special order with instructions to look out for defective switches, but the engineman did not see that the switch points were loose and averred that they appeared to him to be properly lined. However, the report holds him responsible for not running more slowly when he knew from his order that there was a break somewhere in the track circuit. This was the only facing-point switch between the stations named in the train order. The switch had no target or lamp.

A Twin-Fan Unit Heater

A RECENT development of the Buffalo Forge Company, Buffalo, N. Y., is a heater which has been designated as the Buffalo 16-in. Twin Breezo-Fin unit heater. As suggested by its name, the heater has twin fans, each 16-in. in diameter and powered with an electric motor of either 1/20, 1/10 or 1/8 hp. The heater is 3 ft. 8½ in. long, 2 ft. 5 in. high and 10 in. deep, contains only one set of steam and drip connections, and is provided with the Aero-fin heating



The 16-in. Twin Breezo-Fin Unit Heater

coil. This heater is said to have the lowest B.t.u. cost of the entire line of Buffalo unit heaters. It is quiet in operation and, when desired, one of the fans may be shut down, thus lowering the steam consumption and reducing the temperature.

TWO DIESEL-ELECTRIC LOCOMOTIVES built in Great Britain for short runs on the North-Western Railway of India have recently passed successful tests at the manufacturer's Glasgow plant. More powerful than the ordinary oil-electric power units, these engines are designed for running speeds of 47 miles an hour on level track, when hauling three cars. Electrical equipment was supplied by the General Electric Company.

JOHN ONOFRIO, section foreman on the New York, New Haven & Hartford at New Haven, Conn., recently noticed a brake rigging down in a passing train and at once notified the signal tower so that the train might be stopped; and Mr. Onofrio's name stands at the head of citations for vigilance in the company's last magazine, this being the *seventy-eighth* time that his name has been thus entered. This monthly list includes also a track walker whose name appears for the seventh time and a car inspector for the seventh. Three signalmen appear for a third, and several others have a second entry.

Railroad Presidents Testify on "Reciprocity" at Chicago

Hearings on second case adjourn for a month; presentation of evidence by government not yet concluded

THE hearing of the second of the Federal Trade Commission's "reciprocity" buying cases, in which the Waugh Equipment Company and certain officers of Armour and Co. are the respondents, temporarily adjourned on June 28 after three days of testimony by railroad executive officers and others. E. F. Haycraft, attorney for the government, stated that the hearing would be reconvened in the latter part of July, upon the call of Examiner Averill. Before that time Mr. Haycraft expects to obtain a ruling from the Federal Trade Commission on the admissibility of about 40 exhibits, consisting of letters and memoranda, which heretofore had been refused as evidence and which were again offered and refused just before the adjournment on June 28.

The witnesses on June 26, 27 and 28 included the presidents of the Chesapeake & Ohio, the Chicago, Rock Island & Pacific and the Missouri-Kansas-Texas, three vice-presidents of railroads and two officers who are in charge of purchases on their respective roads. In addition several officers of Armour and Co. and the Waugh Equipment Company testified for the government.

E. P. Bracken, vice-president in charge of operation of the Chicago, Burlington & Quincy, was the first witness on the opening day. On the Burlington, mechanical matters are referred to him by his mechanical assistants, and he exercises final authority in the allotment of draft gear purchases, sometimes consulting with C. E. Spens, senior vice-president, before the decision is made. The first negotiations with the Waugh Equipment Company took place in 1927, Mr. Bracken said. Officers of the company called, in company with one of their sales representatives, and explained the good points of the Waugh draft gear. Mr. Bracken discussed the matter with his mechanical assistants and the Waugh gear was given a "small" trial. C. B. Young, consulting mechanical engineer of the Burlington, recommended the gear to Mr. Bracken as one that they could afford to test on that road, and J. H. Reisse, mechanical assistant to the vice-president, was authorized to make a study of the gear in comparison with other gear.

Mr. Bracken testified that in 1927 the Burlington did not have a standard draft gear. The designation of one gear as standard he considered to be contrary to the best interests of the railroad; and during both direct and cross examination he amplified this statement by explaining that the use of one device as a standard creates an undesirable state of mind among the railroad's employees and at the same time discourages equipment manufacturers in the development of new appliances. There is not proper competition when such a condition prevails, he said.

During the remainder of the direct examination it was shown that the Miner gear had been used as a base for car specifications in 1927, that the Waugh gear was first called to Mr. Bracken's attention by Mr. Spens, that Mr. Bracken knew Frederick W. Ellis, vice-president in charge of traffic of Armour and Co., only from hearsay, that the Waugh gear was considered by Mr. Bracken at the suggestion of his superiors, and that the mechanical assistants to the vice-president reported that the Waugh gear was satisfactory for use on the Burlington. Mr. Bracken also stated, on cross examination, that he had conversed with Andrew J. Pizzini, president of the Waugh Equipment Company, and the latter had stated that the purchase of Waugh gear by the Burlington would mean no added traffic for the Burlington. This was a voluntary statement on Mr. Pizzini's part about a year and a half ago, Mr. Bracken said.

E. V. Murphy, general western freight agent of the New York, New Haven & Hartford, located at Chicago, said that he had known Mr. Ellis for five years, and that they had become acquainted in the ordinary pursuance of Mr. Murphy's duties in the solicitation of freight. Mr. Murphy had a conversation with Mr. Ellis about Waugh draft gear on or about April 3, 1928, in the office of the latter. Mr. Murphy at that time called on Mr. Ellis and informed him that the New Haven had made a purchase of Waugh gear. Mr. Ellis was appreciative of the business accorded the Waugh Equipment Company and said that if consistent and possible they would like to have more of it. Mr. Murphy said that he made it a practice to call on the Armour traffic officials about once a month and that he usually stopped to see Mr. Ellis. The relations between the New Haven and Armour and Co. were very friendly long before the question of Waugh draft gear came up, Mr. Murphy concluded.

Wait M. Talcott, a director and stockholder in the Waugh Equipment Company, and president of the Rockford Knitting Mills, first became interested in the Waugh draft gear about 1907. In 1924 when the company was reorganized under its present name he was a stockholder. At the present time he has no connection with the company except as a stockholder and a director. With the old company he had a sales arrangement on a commission basis, which did not continue after the reorganization.

During the testimony of this witness a letter written by Mr. Talcott to John C. Pratt, then a director of the New Haven, on February 16, 1927, was received in evidence. This letter, which was written in New York at the office of the Waugh Equipment Company, and on stationery of that company, was as follows:

"I am a director and am interested in the Waugh Equipment Company. We are very anxious to do some business with the New Haven Railroad, and our salesmen have been trying to stir up some interest with the mechanical department on the Waugh-Gould draft gears, but they have not met with much success.

"The Waugh Equipment Company has among its owners, some very large shippers who might be able to reciprocate in a very substantial manner, if the New Haven people would show a little interest. I do not know if you are in a position to start something, but would appreciate your considering the matter.

"If you want to communicate with the Company during my absence, Andrew J. Pizzini, president, makes his headquarters in the Pershing Square building, and you can reach him by phone—Ashland 5277, or by mail. He is a very fine chap and I want you to know him. In fact, he is a friend of Charlie Powell—the father of your son-in-law.

"I might mention that these devices which I am writing about are nothing new, and are used extensively throughout the country by other railroads—they are standard equipment and equal in every way to the devices being used by the New Haven, and do not cost any more, and I see no reason why the New Haven cannot contribute its patronage—especially in view of the fact that this Company could be most helpful to the road in building up its earnings.

"I am leaving tomorrow and will not be back until April. If you are able to do anything in this matter, I will much appreciate it."

Following the introduction of this letter Mr. Talcott's testimony was taken up with answers to questions, asked by both Mr. Haycraft and the attorney for the respondent, E. M. O'Bryan. On direct examination Mr. Talcott said that he had Armour and Co. in mind when he used the phrase "large shippers" in the second paragraph. He said that he had understood from Mr. Pizzini that Mr. Ellis, Arthur Meeker, a former vice-president of Armour & Co., and John B. Scott, general manager of the Armour Car Lines, were interested in the Waugh Equipment Company.

Mr. Talcott further testified that his use of the phrase "this Company" in the fourth paragraph of the letter was a reference to Armour and Co. In the fourth paragraph he intended that the word "reciprocate" should convey its "regular meaning"—if the New Haven did business with Waugh, Armour might do business with the New Haven.

On cross examination Mr. Talcott said that he wrote the letter upon his own initiative, and not at the behest of the board of directors of the Waugh Equipment Company, Mr. Pizzini, Mr. Meeker, Mr. Scott or Mr. Ellis. He declared the letter to be simply the result of his own thoughts in the matter, and stated that neither Messrs. Meeker, Scott nor Ellis had ever told him that Armour traffic would be taken or given for draft gear purchases.

Upon further direct examination Mr. Talcott testified that he had the traffic of Armour and Co. in mind when he used the word "reciprocate" in the second paragraph of his letter to Mr. Pratt, though upon later cross examination he said that meant the traffic from the companies in which he was interested and others he might be able to influence. He thought that the matter of traffic had been discussed with Mr. Pizzini, but he did not discuss Armour traffic before the writing of the letter in question, he said.

H. W. Beyers, vice-president in charge of traffic of the Chicago & North Western, presented a statement showing the carload traffic handled by that road for Armour and Co. at Huron, S. D., Omaha, Neb., Sioux City, Iowa, and Chicago from 1925 to 1929. Mr. Beyers considered practically all of the traffic represented by the statement to be competitive, except at Huron where the Armour plant is served by the North Western alone.

Mr. Beyers testified that he knew Mr. Ellis and that he had discussed the Waugh draft gear with him in only a general way. About a year ago when the North Western was in the market for new equipment, and draft gear other than that manufactured by the Waugh company was applied to 500 freight cars, Mr. Ellis expressed regret that the Waugh company had lost that part of the award, Mr. Beyers said.

Purchases of Waugh Draft Gear

The North Western purchased 500 of the Waugh draft gear, Type S15G, in 1924, according to a statement presented by Eugene A. Clifford, general purchasing agent of that railroad. Then came the following purchases, all of which were for new equipment: 1926, 250 gear, Type S16G, 50 gear, Davidson Type T18, 500 gear, Gould Type 175, 100 gear, Waugh Type 400, and 85 gear, Waugh-Gould Type 425; 1927, 591 gear, Type 175G, 500 gear, Waugh Type 400, 2,100 gear, Waugh-Gould Type 400A; 1928, 1,900 gear, Waugh-Gould Type 402; 1929, 2,000 gear, Waugh-Gould Type 402. From 1924 to 1929 the North Western purchased draft gear from the Waugh company for renewals to existing equipment as follows: 1924, 1925 and 1926, none; 1927, 825 gear, Type 430, 3,670 gear, Type 400, 15 gear, Type 402; 1928, 45 gear, Type 400A, 15 gear, Type 402, 2,550 gear, Type 430; 1929, 1,215 gear, Type 402, 1,360 gear, Type 430, 1,350 gear, Type 430B. Mr. Clifford said that the Type 430 was ordered from the Waugh Equipment Company to replace an old Waugh gear which was in service on the North Western. Draft gear are usually replaced in kind and he has the discretion in the matter of allocating replacements.

In 1924 the North Western purchased 3,200 draft gear of all makes for application to new equipment. None was purchased in 1925, while in the following years the total purchases of draft gear amounted to 1,250 in 1926, 3,216 in 1927, 1,900 in 1928 and 2,500 in 1929.

Mr. Clifford said that if the price, quality and service of a product were right he preferred to help those who helped the railroad. He first learned of the Armour connection with the Waugh Equipment Company in 1927, he stated, although he did not take that into consideration in the matter of draft gear purchases.

Roy C. Munro, western sales representative of the Waugh Equipment Company, at Chicago, testified that he called on various mechanical and purchasing officers of the Chicago, Rock Island & Pacific to sell draft gear in November, 1926. He found it quite a bit of work to get the Rock Island interested in the Waugh gear and was assisted in his efforts, first by Walter Bentley, a representative of the equipment company, and later by Mr. Pizzini.

Walter E. Dunham, superintendent of the car department of the Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha, stated that when he first entered the service of the North Western in 1902 the draft gear in use was of the coiled spring type, either single or tandem. In 1908 the Waugh Draft Gear Company placed a spring plate gear on the market and the North Western purchased gear of the type until 1917 or 1918. In 1926 the road purchased gear from the Waugh company of the S16G Type, but since that time none of that type has been purchased for freight car use, although purchases have been made of the friction type gears manufactured by that company.

The Waugh-Gould Type 430 is similar to Type 400A, but has a shorter housing, and was designed especially for the North Western, to replace old spring plate type gear on freight cars, he said. Mr. Dunham stated that during 1929 and 1930 the C. & N. W. has underway a program of reconditioning about 1,000 freight cars. On certain older types of equipment, worn out parts are replaced, but on relatively newer cars the entire gear is being replaced with the Type 430. The gear is being replaced, he said, because of the increase in the average length of trains from 40 cars to 125 cars. Mr. Dunham also said that there are only a few railroads in the United States that had as many Waugh draft gear as did the North Western.

Mr. Dunham then recounted the experience of the C. & N. W. with Waugh gear in substance as follows:

On his own initiative Mr. Dunham made an investigation of the Waugh plate gear in 1924, 18,000 sets of this type having been purchased prior to that date. Each gear contained from 38 to less than 30 plates, most of them arranged in four sets of nine plates each. He found, in 1924, that the Waugh draft gear, some of which were purchased as long ago as 15 years before 1924, did not have sufficient capacity to meet modern requirements. Personally, he objected to a spring plate

gear, basically, because of its lack of power of absorption. His viewpoint was that in general freight service, particularly where cars are interchanged with other lines, use should be made of an abrasive friction type of gear, because of the punishment cars must undergo. The application of the Type 430 was a matter of economy on certain North Western freight cars. The friction type gear has appeared to be the natural development of the draft gear industry, and it found favor with him because of its recoil characteristics.

In 1926 the C. & N. W. equipped 500 flat cars and 250 Hart convertible ballast cars with Waugh gear, Mr. Dunham testified. The ballast cars were so equipped upon the recommendation of C. T. Dike, engineer of maintenance of way of the road, while the application of that make of gear to the flat cars constituted a test of a plate gear for recoil.

At this point the two attorneys, Mr. Haycraft and Mr. O'Bryan, reached an agreement as to the suitability of the Waugh spring plate gear for passenger cars, under which the government attorney conceded that for such use that gear is perfectly satisfactory, and indicated that its use on such equipment would not be questioned during the remainder of the hearings.

Sales of Gould and Waugh Gear

During the course of the hearing on June 26, two exhibits were introduced showing the number of Gould draft gears sold between January 1, 1921, and April 1, 1926, by the Gould Coupler Company, and the number of Waugh draft gears sold from January 1, 1921, to July 31, 1924, by the Waugh Draft Gear Company. The first statement showed that the Gould Coupler Company sold 2,123 Gould gear in 1921, 5,493 in 1922, 3,113 in 1923, 3,205 in 1924, 2,152 in 1925 and 474 in the first three months of 1926. The second showed that the Waugh Draft Gear Company sold 240 Waugh gear in 1921, 1,288 in 1922, 1,695 in 1923 and 2,782 in the first seven months of 1924.

John B. Scott, who has been general manager of the Armour Car Lines since January 1, 1920, and also assistant to the vice-president in charge of traffic of Armour and Co. since about January 1, 1929, testified that he first met Mr. Pizzini in 1925, through an introduction by Mr. Ellis. He first obtained a stock interest in the Waugh Equipment Company in that same year, when he was presented with 256 shares by Mr. Ellis, for which he paid no money. At that time Mr. Scott said that he did not consider the stock to be worth very much.

Mr. Scott said that when he got the stock he knew no one in the Waugh Equipment Company except Anson L. Bolte from whom he had purchased, as an agent of the Waugh Draft Gear Company, 10 sets of draft gear in 1924. In March, 1924, the Armour Car Lines contracted with the Waugh Draft Gear Company for use of that gear on its refrigerator and tank cars and it was decided to make the Waugh gear standard for those lines. The agreement, which was dated March 11, 1924, and was taken over by the reorganized company, was in part as follows:

"We agree to deliver 18½ in. Waugh draft gears to equip 500 Armour or Morris cars at $51.20 per set F. O. B. Chicago shops in 100 car units or more.

"We also agree to promptly deliver to your Chicago car shop at the same price, any additional number of 18½ in. Waugh gears that may be ordered during the year 1924.

"During the year 1925 and thereafter, we agree to promptly deliver your Chicago shops such additional 18½ in. Waugh draft gears as you may order at a cost of approximately $51.20 per car set, as closely as manufacturing costs will permit, and we will give you the benefit of any reduction in cost that may occur, and will also agree to give you the benefit of any lower price we may make to any one else during the existence of this agreement. Further, if the material market or labor market, or both, should advance materially during 1925, or thereafter, we will bring to your attention the advance occurring in the manufacture of our draft gears and would add to our present cost only the exact increase that we might be compelled to pay in the production of the gears.

"We will guarantee for a period of 7 years from date of application against all damage or breakage of all or any part of the Waugh draft gears regardless of the cause, and against any or all spring plates taking permanent set of ⅛ in. or more and will replace any or all such parts free of expense to Armour Car Lines. * * * * * * *

"We will also guarantee for a period of 7 years, that the cushion capacity of Waugh draft gears will be maintained to within 90 per cent of capacity as when installed."

Mr. Scott recollected that he met Mr. Pizzini after the stock was presented to him. Later he purchased 153 shares—a part of the stock originally owned by T. E. Bragg, though he did not know who had acquired the remainder of that stock. The stock which Mr. Scott owns stands in the name of Celeste K. Scott—a total of 409 shares.

Mr. Scott testified that F. Edson White, president of Armour and Co., did not tell him that the latter owned any stock in the Waugh Equipment and neither was he told that Mr. White had any Waugh stock, by Mr. Pizzini.

The first witness on June 27 was G. W. Seidel, who was superintendent of motive power of the Chicago & Alton from 1918 until his retirement from active service in 1928. That road purchased 30 sets of Waugh draft gear for test purposes in 1927 or 1926, following receipt of instructions from W. G. Bierd, receiver of the road, to try them out. These gear were applied to 100,000-lb. capacity coal cars.

Walter Bentley and R. J. O'Brien, representatives of the Waugh company, made a visit to Bloomington, Ill., Mr. Seidel's headquarters, after the order for the gear was placed, the witness said. Later Albert J. Sams, who in earlier testimony was shown to have been selling Waugh gear on a commission basis as a manufacturer's agent, called at Bloomington and attempted to sell some more Waugh gear, in March, 1926. Mr. Seidel testified that Mr. Sams stated that he was satisfied that if more draft gear were purchased it would materially help the Chicago & Alton through the road's obtaining some of the packer business. When questioned further by the government attorney Mr. Seidel was unable to remember whether Mr. Sams had mentioned Armour or Swift business in connection with the purchase of draft gear.

Mr. Seidel said that the Chicago & Alton had trouble with the Waugh gear that had been installed, and it was found that the plates in the gear broke. The Waugh company admitted that the gear was too light for those particular coal cars and agreed to replace those that had broken. Mr. Bierd was informed of the condition of the gear by Mr. Seidel and the former stated that they would have to be replaced. Mr. Seidel said at the time he retired the broken gear had not been replaced by the Waugh company. The Alton had previously ordered 10 sets of Waugh gear for passenger cars in 1919 or 1920. Under cross examination Mr. Seidel said he supposed that if Mr. Sams made a statement such as he did concerning traffic that it would be "backed up" by someone.

John J. Bernet, president of the Chesapeake & Ohio and the Pere Marquette, and formerly president of two other Van Sweringen roads, the Erie and the New York, Chicago & St. Louis, testified that his present policy was against confining purchases to one type of equipment, preferring competition. On the C. & O. and the P. M., Mr. Bernet said that he exercised general supervision over the purchase of new equipment and specialties such as draft gear. The chief purchasing officer asks for bids, subject to the specifications which contain one particular type of draft gear for use as a base, with alternates. The mechanical engineering committee of the Van Sweringen

lines, which is made up of the superintendents of motive power of the individual roads, attends to the details of the specifications for W. G. Black, mechanical assistant to the president of the C. & O. and the P. M.

For a test Mr. Bernet said that Waugh gear were installed on locomotive tenders on the Nickel Plate. When he was president of the Erie and of the Chesapeake & Ohio and of the Pere Marquette, Waugh gear were purchased with price and quality the only factors taken into consideration. In December, 1928, the subject of draft gear was discussed with W. J. Harahan, senior vice-president of the Chesapeake & Ohio, and notes were compared on the various types before the engineering committee was advised of their preference. During that discussion it was thought that the Waugh gear was standing up satisfactorily on the Van Sweringen roads.

Some years ago Mr. Bernet said that Mr. Ellis asked him to make a test of the Waugh gear, when the former was with either the Nickel Plate or the Erie. That was the only time that Mr. Ellis spoke of draft gear to Mr. Bernet, and at that time Mr. Ellis did not state why he was interested in the Waugh Equipment Company. Mr. Bernet said that he was always ready to make a test of new devices, with a view to finding something better.

Columbus Haile, president of the Missouri-Kansas-Texas Lines, testified that car specialties were purchased by his road through the purchasing agent and specifications provided by the mechanical officers. Bids are requested in some cases, but not in all.

Waugh draft gear were first purchased by the Katy for test purposes, he said. The only considerable number was purchased in 1930, for 600 hopper bottom coal cars. The Waugh gear was not originally specified on this equipment. Mr. Haile added that he was not a mechanical man and that he relied upon H. M. Warden, chief mechanical officer of the Katy, for recommendations from a mechanical standpoint.

In the purchase of the Waugh gear he said that he relied upon the report of the mechanical department of the Katy, the price and policy. He explained the last consideration by stating that neither promises of additional traffic nor threats of withdrawal of traffic were connected with the transaction. The only conversations he ever had with officers of Armour and Co. were with respect to the volume of traffic shipped by that company over the Katy and were not at any time connected with equipment or parts of equipment. Mr. Haile said that he had known Mr. Ellis for many years through the solicitation of traffic for the Katy, and that his discussions always centered upon "A greater volume than we have got—always more."

Frank M. Whitaker, vice-president in charge of traffic of the Chesapeake & Ohio, presented a statement of car load traffic handled by that road and the Hocking Valley for Armour and Co., which like other traffic statements introduced by the government in this case were merely marked by the examiner for identification and were not made a part of the record as evidence. In connection with the statement Mr. Whitaker said that in September, 1929, a new expedited train from Chicago over the Hocking Valley, the Chesapeake & Ohio and the Erie was placed in service, enabling the intensification of perishable and merchandise traffic solicitation and the obtaining of more traffic. This train increased business and gave better connections to the South. He also said that the Chesapeake & Ohio has lately been carrying more competitive perishable and merchandise traffic into the "Norfolk & Western mining district" than formerly.

E. T. Reynolds, general freight agent of the Pere Marquette, appeared at the hearing in answer to the subpoena that was sent to C. M. Booth, traffic manager, and he also presented a statement of Armour car load traffic handled by the Pere Marquette. Mr. Reynolds said, as an explanation of the increased Armour traffic handled during the past two years, that on October 1, 1929, two new fast trains were placed in service between Chicago and Buffalo, N. Y.

A statement of draft gear purchases on the Chesapeake & Ohio, the Hocking Valley and the Pere Marquette from January 1, 1924, to April 30, 1930, was presented by H. C. Pearce, director of purchases and stores of the C. & O. and the P. M., and was marked for identification, but was not made a part of the record as evidence. Mr. Pearce testified that inquiries for draft gear for new equipment for the C. & O. and the P. M. are sent out by the purchasing officer to all manufacturers. Proposals and other data received are tabulated and forwarded to the chief mechanical officer who from that data determines the type of gear and the manufacturer from whom it is desired that it shall be purchased. The purchase is then made according to the chief mechanical officer's recommendation.

Gears for repairs and replacements, if for a foreign car and a type not in stock on the railroad, are ordered direct from the railroad owning the car. For cars belonging to the C. & O. or the P. M. draft gear replacements are made by purchases in kind.

During the testimony of James E. Gorman, president of the Chicago, Rock Island & Pacific, a number of letters were introduced as evidence—correspondence between Arthur Meeker and Mr. Gorman. On December 19, 1927, Mr. Meeker wrote to Mr. Gorman as follows:

"I understand a representative from your mechanical department was at Depew the other day investigating the Waugh draft gear and would be very glad to know if we are in a position to bid on any of your requirements now."

Mr. Meeker said in another letter to Mr. Gorman on January 5, 1928, that he hoped "we will have an opportunity to bid on your future requirements in the draft gear line."

Mr. Gorman wrote a letter to Mr. Meeker on January 13, 1928, in which he said:

"Mr. Goodwin, who visited your plant and witnessed the test of Waugh draft gear, made a favorable report, and your company will have an opportunity of bidding when we are in the market for gears, and I am particularly glad of it on account of yourself and your associates in the enterprise—though the prospect of a sizeable purchase in the near future is not good."

The last of this group of letters, written by Mr. Meeker to Mr. Gorman on February 4, 1928, was the following:

"I was in Washington last week, went on to New York, and heard that the Waugh Equipment Company got orders for their equipment for one thousand of your cars, and I am very, very much obliged to you. I am sure they will give you good service."

Under cross examination by the attorney for the respondents Mr. Gorman stated that his relations with Mr. Meeker had covered a long period of years, though he had never done much business with him. Draft gears on a railroad are the most difficult of the specialties to deal with, Mr. Gorman continued, because the sales are the most intensively pursued. He said that he came to the presidency of the Rock Island without knowing what a draft gear was or what it looked like. He was taken to a number of draft gear manufacturing plants, watched tests at those plants and concluded that in each case the competing gear used in the tests must have been worn out and aged because each individual manufacturer's gear made the best showing at the particular plant where the test was made.

Mr. Gorman was impressed with the Waugh draft gear because of the fact that it was standard on another railroad. He said that he could not see the advantage of buying in large quantities from companies that do not ship over the Rock Island lines.

In the course of further direct examination Mr. Gorman stated that there was not room on the Rock Island for everyone to obtain draft gear orders. He thought that other draft gear manufacturers might give way to the Waugh company because of the possibility of traffic for the Rock Island. At the same time he had no definite indication that more traffic would be given, and neither had he discussed the traffic matter with Waugh officers nor officers of Armour, in this case simply drawing upon his experience in such matters.

George A. Hood, secretary and treasurer of the Mechanical Manufacturing Company, and manager of the bureau supervising the affairs of the Swift family, was questioned concerning the 1,666 shares of Waugh Equipment Company common stock which he holds as "George A. Hood, Trustee," at the hearing on June 28. He stated that the stock was not held for any officer or employee of Armour and Co., and referred to it as a purely personal matter concerning which he did not care to testify.

The second witness of that session was Frederick W. Ellis, vice-president in charge of traffic of Armour and Co., and president of the Armour Car Lines. He stated that his work involved the designation of the railroads which shall carry the traffic of Armour and its subsidiary companies. Queries by the government attorney elicited the information that Arthur Meeker, formerly a vice-president of Armour and Co., resigned from that position within the past year, and would at the present time be eligible for a pension from that organization.

Mr. Ellis said that he first met Mr. Pizzini in 1924 or 1925 and that he was introduced to him by Mr. Meeker, at the same time that he met T. E. Bragg, a former stockholder and one of the organizers of the Waugh Equipment Company. Mr. Pizzini and Mr. Bragg talked to Mr. Meeker about Waugh draft gear and Mr. Ellis was made a party to the consultation so that they might discuss the use of the gear on Armour cars. At that time the Armour lines were already in possession of some test sets of gear.

Stock Transactions

Mr. Ellis testified that later he received some common stock of the Waugh Equipment Company. Of the total amount of stock originally received by Mr. Meeker—1,666 shares—Mr. Meeker retained 40 per cent, Mr. Ellis received 40 per cent and Mr. Scott received 20 per cent. Mr. Ellis said that at the time he didn't pay much attention to the stock because he didn't think that it was worth anything, in response to a question designed to fix the date of his acquirement of the stock. He thought, however, that some time intervened between the time he was told that he would receive the stock and it actually came into his possession. Subsequently he gave the stock to his wife, Etta L. Ellis, and, including a purchase of stock that was made later, all his holdings of stock of the Waugh Equipment Company finally focussed in the 1,069 shares held by Mrs. Ellis.

Mr. Ellis stated that he did not know whether F. Edson White ever bought any stock in the Waugh Equipment Company. Marjorie B. Reynolds, who was listed as of May 1, 1930, as the holder of 100 shares of common stock, is the wife of F. J. Reynolds, general purchasing agent of Armour and Co., Mr. Ellis said.

When George Hannauer, deceased, was president of the Boston & Maine, Mr. Ellis talked with him in November, 1928, about the purchase of Waugh draft gear. Mr. Ellis testified that he had told Mr. Hannauer that the Waugh gear were used by the Armour Car Lines and asked that the mechanical department of the Boston & Maine investigate them, also urging that someone be sent to the Waugh laboratory at Depew. Mr. Hannauer promised that he would investigate, after Mr. Ellis said that that action would be as much to the advantage of Mr. Hannauer as to the Waugh Equipment Company.

Mr. Pizzini, who was on the witness stand for only a few minutes, answered several questions concerning F. Edson White. He testified that he had never sold any stock in the Waugh Equipment Company to Mr. White, that he had never had any negotiations looking toward the sale of stock to him, and that as far as the records of the Waugh Equipment Company are concerned Mr. White's name does not appear.

As in all the other hearings in this case, each railway officer who testified was asked on cross-examination by the respondent attorney whether he was acquainted with Mr. Meeker, Mr. Scott or Mr. Ellis, or any officers or employees of the Waugh Equipment Company. In each case, with the exception of the testimony of Mr. Seidel, which has already been covered, when a witness admitted acquaintance with any of those persons, he was asked certain traffic questions, to which the answer was in all cases, in the negative. These questions were, first, whether a promise had ever been made of additional Armour traffic in return for draft gear purchases from the Waugh company, and second, whether a threat had ever been made to withdraw Armour traffic in the event that no purchases of Waugh draft gear were made.

* * *

International News
A Southern Pacific Train Specially Equipped for Fighting Forest Fires

Communications and Books

"What Is the Economic Weight of Rail?"

BALTIMORE, MD.

TO THE EDITOR:

The elaborate report of the investigations carried on by the Kansas City Southern to ascertain the economic weight of rail, and the resulting conclusions, published in *Railway Age* of May 24, are interesting, if only from the point of view that some, at least, of the railways are alive to the fact that further and radical economies in operation must be effected if the roads are to meet successfully the constantly increasing competition presented by other forms of transportation. As the hope of increased rates is an entirely elusive one, and as the mandatory edict of the law which directs that the roads shall be allowed to earn a fair rate of interest on investment, which fair rate is specified, has been and is still being ignored, the situation confronting the roads is one for grave consideration, which does not lead to optimism.

As if these conditions were not sufficiently serious, the proposal for congressional legislation is constantly recurring, every suggestion aiming directly to handicap the roads, as were the Prussian railways years ago until their owners gave up the fight and permitted them to become nationalized at the Government's own price, which is the evident intent of our own radicals, for their dominant idea of government ownership and administration of the railways of the United States is far from being dead. As a political prize government ownership is far too valuable.

An attempt to solve, at least partially, the problem of further economies in the operation of our roads by the use of heavier rails along present standards, ignores the fundamental fact that these standards of track construction are as archaic as was the old timber stringer and iron strap construction in use 75 years ago. What the present and future demand is real permanent way, which our rails, heavy or light, nailed to wooden ties do not provide. What form such permanent way will take is a problem which our engineers have not yet solved, their efforts being confined to endeavors to meet the exigencies of heavier wheel loads and faster speeds by strengthening the old standards which will eventually be thrown into the scrap heap.

The essentials of track maintenance are: First, drainage; then proper ballast rolled and tamped beyond probability of settlement, not loosely dropped from so-called ballast cars and allowed to compact itself as is generally done in order to save the expense of labor. This practice has cost the railroads millions of dollars in increased cost of maintenance. The thickness of such ballast should be contingent upon the kind of rail structure which is to be placed upon it. What such rail structure will be remains for the future to demonstrate.

It may be rails partially embedded in a blanket of reinforced concrete and held together transversely by steel bars placed so as to rest entirely in the concrete. As to the proper section and weight of the rails, these must be determined by extensive experiments. Contrary to apparent acceptance, the present T-rail section is not sacrosanct. It is uneconomical from one fact alone and that is that the obsolescence of a very small part of the head throws out of service in a first-class track 99 per cent of all the steel. Possibly a stiff vertical plate with a flanged base and a detachable head might be the solution of the problem. The fact that some crude forms of such a device have not proved successful is no good reason why the principle should be condemned. If we allowed such reasoning to sway our judgment, we would have no airplanes in their present form today. Valuable ideas are often presented in advance of the psychological moment. The genius of the American engineer, when strongly challenged, has always met successfully every exigency encountered, and it can be depended on to do so in this case when necessity compels. Other and better solutions of the problem can probably be devised, but something in the shape of a rail that does not require the practical scrapping of 65 dollars' worth of its material, when possibly only one dollar's worth is worn out, would lead to real economy which would not require elaborate mathematical formulas to demonstrate.

The belief that rails must be short in length on account of expansion and contraction with varying temperatures has been fairly well discredited. Rails 66 ft. long are being used successfully by steam roads and rails made in short lengths to permit easy handling can be welded on the ground to form any length, in fact can be made continuous. With the greater part of the section embedded in concrete, contraction and expansion would be eliminated, as is proved by the practice of urban traction lines. The saving which would result by the elimination of wooden ties, tie plates, spikes, angle bars, bolts, nuts and anti-creeping devices would be great and should go a long way to cover the cost of a standard track such as suggested.

The average annual charge per mile for the maintenance of our present standard track cannot be capitalized at much less than $50,000. Even if only one-half of such capitalization were saved, when added to that made by the elimination of the wooden ties and the various track accessories mentioned above, it would likely reduce in comparison the first cost of a permanent way to allowable economic figures.

The time is coming, in fact has arrived, when electricity will force higher speeds on the railways than are now obtained. Soon 50 and 60 miles per hour will increase to 75, 80 and possibly 100, that is if the railways expect to retain even their present high-grade, long-haul traffic. Already Diesel-electric locomotives, with fuel capacities sufficient to enable them to run 2,500 miles at high speeds without refueling, are in the offing. There will be no reasonable limit of speed which they cannot reach and maintain if safe and smooth tracks are provided for them, although our present tracks do not meet these requirements. Will the railways interpret correctly the plain hand-writing on the wall?

The race between heavier wheel loads and higher speeds as against heavier rails has been in progress for a long time and if any verdict is permissible at this time, it is that the former are ahead. What is the answer? Not heavier rail, which under present methods of manufacture grows proportionally weaker as it gains in weight, thus forcing more dollars to be thrown away as its head wears out. With a proportional volume of traffic, the head of a heavy rail will go as quickly as that of a lighter one. The life of our present rail is limited by the battering at the joints and the wearing of its skin, which, like the enamel of one's teeth, when once ground away permits the rapid disintegration of the body of the structure. Possibly the increase of wheel loads will not go on in the future as in the past. We have all heard this siren song many times, but it is certain that speeds will become faster and the life of our rail will be shortened proportionately. Our present rail is the most uneconomic feature of our great railway structure and the modern methods of its manufacture have accentuated the condition.

Overheating, slap-banging through the rolls onto the straightening and cooling beds—the production of quick tonnage and more tonnage is the aim of the mills. In the old days, reheating of the uncompleted rail with a corresponding number of passes through the rolls was the practice. Break a modern and an old-time rail, say a Lackawanna or a Krupp, under the hammer, and one does not need a microscope to note the marked difference in their crystallization; the former coarse, large and irregular, a mass of blotches, the latter fine grained and homogeneous. Actual

experience has proved that a lighter section of the old-time rail has far outworn heavier ones of later make in the same track; in fact laid exactly opposite. Whether reheating and more passes through the rolls allows time for a proper assembling of the particles (or whatever scientific name they may be called) of the steel, only a metallurgist is competent to venture an opinion, while a layman can only surmise.

The mills, of course, consider it good business to urge the roads to buy heavier rails per mile of track. If one can sell a bushel of potatoes at a profit, naturally one wants to sell many bushels, and after us the deluge. That is human nature and will be to the end.

JOHN F. STEVENS,
Consulting Engineer, formerly Chief Engineer of the Great Northern, etc.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Bibliography of Virginia Since 1865, by Lester J. Cappon. "The word 'history' was interpreted in its broadest sense to include every phase of man's activity and thought, and most of the entries consist of the raw material from which formal history is written." Preface, p. xiii. Material in 28 libraries relating to Virginia is listed under appropriate classifications. The Library of the Bureau of Railway Economics and of the Interstate Commerce Commission are designated by initials "BRE" and "ICC". Material relating to railroads is in the section "Transportation and Communication". Material published by Virginia railroads about Virginia is to be found under "Agriculture", "Resources and Industry", "Description and Travel." Indexed. 900 p. Pub. by the Institute for Research in the Social Sciences, University, Virginia. $5, paper-bound. $6, cloth-bound.

California—An Index to the State Sources of Agricultural Statistics. Part I—Fruits, Vegetables and Nuts—An Index to Official Sources, compiled by Louise O. Bercaw, under the direction of Mary G. Lacy, Librarian. Agricultural Economics Bibliography No. 31. This is the first part of the California index and indicates official sources of data on acreage, cost of production, freight rates, prices, production, shipments, unloads, value, value of shipments, and other subjects relating to fruits, vegetables, nuts, and canned goods. 342 p. Pub. by Library, Bureau of Agricultural Economics, Washington, D. C. *Apply.*

Periodical Articles

"The American Business Man's Partnership with the Railroad a New Thing in Business History." Interview with L. W. Baldwin. "The whole industry of human organization to meet human necessities and provide human comforts has no parallel to the partnership of the American citizen with the American railroad; the whole history of human confidence presents no parallel to the confidence in railroad efficiency of the Americans who make steel with a four-weeks' inventory on hand, raise strawberries 1,000 miles from the breakfast table where they must be eaten, and run stock farms 200 miles from the market whose prices must be taken advantage of on 24 hours' notice." p. 17. Illustrated. Executives Magazine, June 1930, p. 15-17.

Building Efficiency into a City, by W. J. Austin. Plans for transportation terminals, p. 28-29. Illustrated. Nation's Business, p. 28-30, 86-88.

Railroad Rates and Consolidation, by Agnes Laut. A look back into history for the results of consolidations so far. Illustrations and maps. Nation's Business, July 1930, p. 31-34. 138, 140.

Railway Bought to Handle Rush Hour Traffic, by R. L. May. "So many bus lines have been bought by trolley companies that when the process is reversed people ask why . . . The Mount Vernon, Alexandria and Washington will be operated in co-ordination with bus lines." p. 308. Bus Transportation, June 1930, p. 308-309.

Looking Backward

Fifty Years Ago

The Denver & Rio Grande [now the Denver & Rio Grande Western] has been completed to Leadville, Colo., 157 miles from Pueblo and 277 miles from Denver.—*Railway Age,* July 8, 1880.

The decisions of several United States courts requiring railways to admit all express companies to the privilege of their roads on equal and reasonable terms has not ended the controversy over the express business. In Colorado the federal court has issued a writ of injunction restraining the Denver & Rio Grande [now the Denver & Rio Grande Western] from excluding the Adams Express Company from the use of the railway on and after July 1.—*Railway Age,* July 8, 1880.

As a sample of the past and present in railroading, the following shows how much more perfect is the system of 1880 than that of 1866. In the latter year it took a passenger five days to go from New York to New Orleans, La., making nine changes, and many of the changes necessitating a long walk from depot to depot. In 1869 it took four days, with two or three changes; in 1873, three and a half days, with one change; in 1878, three days, with one change, and now, in 1880, one can go in sixty hours and forty-five minutes, with one change. —*Railway Review,* July 3, 1880.

Twenty-Five Years Ago

J. L. Campbell has been appointed engineer maintenance of way of the El Paso & Southwestern and the El Paso-Northeastern [both now parts of the Southern Pacific]. Charles A. Dunham, signal engineer of the Illinois Central, has been appointed signal engineer of the Great Northern.—*Railroad Gazette,* July 7, 1905.

The secretary of agriculture has caused to be prepared 1,200 suits against various railways engaged in the shipment of live stock, because of their violation of the statute which requires that stock in transit shall be unloaded for food and water at least once in every 28 hours, and permitted to remain unloaded not less than five hours. The penalty for the violation of this law is a fine of $500.—*Railway and Engineering Review,* July 8, 1905.

Ten Years Ago

Reports made to the American Railway Association by a very large majority of the railways show that between March 21 and June 12, which includes the period of the strikes, the number of cars moved by these roads was 8,264,485, as compared with only 7,708,927 during the same weeks of 1919.—*Railway Age,* July 2, 1920.

The shippers of the United States, as represented by their testimony before the Interstate Commerce Commission in the general rate advance hearings, are practically unanimous in favor of a substantial general advance in freight rates for the purpose of increasing the revenues of the carriers, at least to the extent of recognizing the necessity for an increase and offering no objection to any amount the commission may find justified.—*Railway Age,* July 2, 1920.

Prodded by the President of the United States, by Government officials and by labor organizations, and confronted with sporadic "protest" strikes, principally of yardmen in Eastern terminals, the United States Labor Board issued a statement on June 25 to the effect that a decision on the billion dollar wage demands of organized railway employees, which the board has had under consideration since April 20, will be announced on or possibly before July 20.—*Railway Age,* July 2, 1920.

Odds and Ends of Railroading

A Chess Champion

William F. Jennings, of the general freight traffic manager's office of the New York, Chicago & St. Louis, has developed an enviable reputation as a chess player. Competing in the recent Ohio state championship, he handily eliminated his opponents and tied for first place with a player who has held the Ohio championship for five years.

Heroes and Heroines

The Illinois Central might be nominated as the road having the most heroes and heroines. Of the 34 United States medals for life-saving on railroads which have been issued since the award was established by Congress about 25 years ago, members of the Illinois Central family are now in possession of five. President Hoover recently awarded the fifth to J. P. Clendenin, agent at Hattiesburg, Miss., who pushed a woman and a child out of the path of a train at Wiggins, Miss.

A Wild Party

Engineman U. G. Porter of the Pennsylvania was sauntering peacefully down the street in Oil City, Pa., on his way to the barber shop, when suddenly a deer crashed into him and knocked him over. How the deer came to be running wild on the streets of the city, no one knows. Possibly the hunters scared him out of the woods. After much excitement, including charging through a plate-glass window, the deer was finally subdued by Henry Rozeski, a call boy for the Pennsylvania.

Speaking of Sharpshooters

Clair I. Kephart, locomotive flue cleaner for the Buffalo, Rochester & Pittsburgh, is a rifle shot of national reputation. He is a sergeant in the militia, and, in this capacity, participated in ten matches at the last national shoot at Camp Perry, Ohio, firing under various conditions and from various distances, and scoring an aggregate of 931 out of a possible 1,005. He won the individual rifle match, the citizens' military championship, and the grand aggregate match, thus adding three more medals to his large collection.

French's After-Dinner Speaking Record

Edward S. French, president of the Boston & Maine, has practically a strangle hold on an enviable reputation as a perfect after-dinner speaker. At a meeting of the railroad's foremen's union on May 25 his speech, shortly after his election to president, consisted of 11 words, bringing his total after-dinner verbosity, as president of the Boston & Maine, to 29 words. His longer speech, according to the New York World, was as follows: "I am glad to be here. I am having a good time, and I hope that you are." Several days earlier he spoke before the Nashua (N. H.) Fire Relief Committee and said: "I am glad to see you all. How do you do?"

Again—Once in a Million Times

Here is something that couldn't happen in a small town, and wouldn't occur in a city once in a million times. It is a striking illustration of the fact that in a large city, one-half of the population doesn't know how, where, or why the other half lives.

A short time ago a lady in Oakland called the baggage office and reported that she had a traveling bag which did not belong to her, and that her own bag was missing. Steps were taken immediately to locate the missing bag. In a short time another call came in from a second woman, reporting an exactly similar situation. An investigation developed that both ladies arrived at Oakland on the same train, and had, in some unaccountable manner, exchanged bags when leaving the station, the mixup not being discovered until each had reached home.

The remarkable fact in connection with the incident is that both ladies lived on the same floor of the same apartment house, and in adjoining apartments. Neither had ever met the other. To effect the return of the bags to the owners, all that was necessary was for one of the ladies to walk across the hall to the other apartment.—Southern Pacific Bulletin.

When Sam Bowers Retired

When Sam Bowers made his last trip as a conductor on a suburban run on the Missouri Pacific at St. Louis, an extra coach was required to accommodate all the commuters who wanted to bid him "good-bye." Many whose habit it is to ride an earlier train waited for the 5:52 and a late dinner in order to be with Mr. Bowers on his last trip to Kirkwood and the end of 52 years of railway service. A St. Louis newspaper said of Mr. Bowers: "Daughters approach him at Union Station to inquire if their fathers are on board, and usually Bowers can tell in what coach they are riding. Young sons who leave his train in the terminal yard to save the few minutes it takes to back into the station are liable to find themselves questioned about the incident at home. Bowers will have warned the head of the family of the danger."

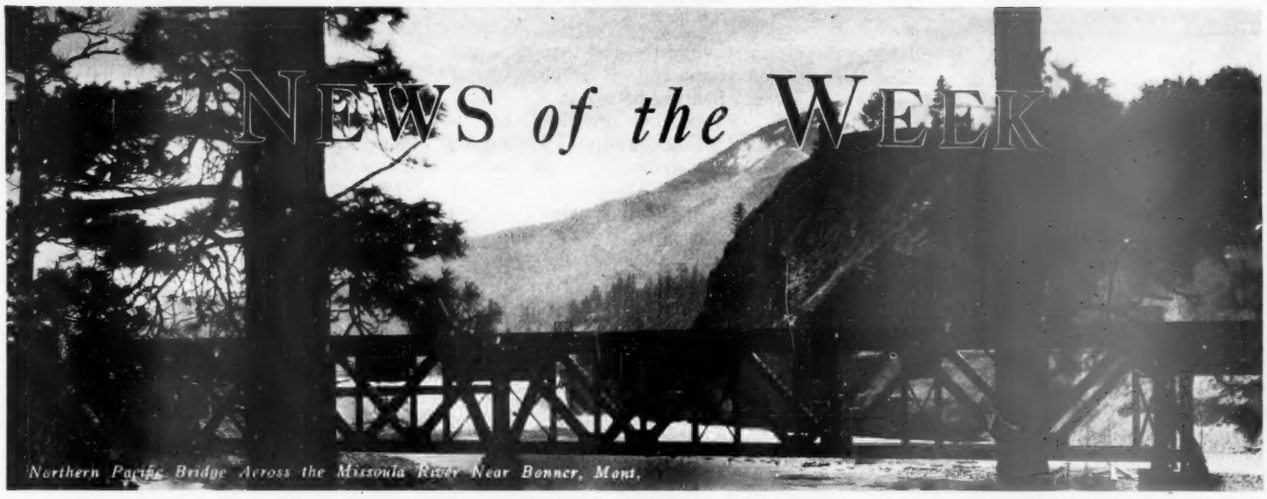
Through Cars in Europe

One of the amazing things about European railways is the number of through cars operated that wander from train to train and country to country. Of course, the various international expresses are well-known, such as the Orient Express from Paris to Constantinople, but practically every fast train carries several of the "wanderers," shunting off a few here and picking up others there. A good example of this type of car is the one that runs from Graz, in southeastern Austria, to Frankfurt-on-Main, in central western Germany. This car makes a run of somewhat over 700 miles in a little less than 24 hours, averaging about 30 miles an hour, a really remarkable performance, when it is considered what happens to it in this distance. After leaving Graz, it runs north to Bishoffshofen on a through train from Trieste to central German points. The Vienna-Paris express picks it up there and takes it as far as Feldkirch on the Austro-Swiss border. From here a fast local train takes it across the German border to Lindau. Another fast local train takes it 20 miles or so to Friedrichshafen. The Berne-Berlin train brings it to Stuttgart, from where a fast secondary main-line train finally takes it to its destination at Frankfurt.

The Same Old Stork

An English reader from Harrow-on-the-Hill, Middlesex, England, in commenting upon our item concerning the Oklahoma baby who was named "Frisco" in honor of the railroad and train upon which he was born, calls attention to a quotation from *Martin Chuzzlewit,* by Charles Dickens, written about 1843. Our informant observes that "your railways are apparently up to the same old tricks as the English ones in the days of Dickens." The extract, which appeared recently in the Railway Gazette, London, follows:

"Them confugion steamers," said Mrs. Gamp, shaking her umbrella again, "has done more to throw us out of our regular work and bring events on at times when nobody counted on 'em (especially them screeching railroad ones) than all the other frights that ever was took. I have heard of one young man—a guard upon a railway, only three years opened—well does Mrs. Harris know him, which indeed he is her own relation by her sister's marriage with a master sawyer—as is godfather at this present time to six-and-twenty blessed little strangers, equally unexpected, and all of 'um named after ingines as was the cause." "Ugh!" said Mrs. Gamp, resuming her apostrophe, "one might easy know you was a man's invention, from your disregardlessness of the weakness of our natures, so one might, you brute."



Northern Pacific Bridge Across the Missoula River Near Bonner, Mont.

CONGRESS HAS PASSED a bill authorizing the construction of a new building at Washington for the Interstate Commerce Commission.

THE SENATE on Tuesday, July 1, passed the Howell resolution, providing for an investigation of the affairs of the Alaska Railroad.

THE MOUNT TAMALPAIS & MUIR WOODS has applied to the Railroad Commission of California for authority to abandon the operation of its lines between San Francisco, Cal., and Muir Woods and Mount Tamalpais, 12 miles, because of excessive highway competition.

BOTH HOUSES OF CONGRESS have passed and the President has signed a bill to increase the salaries of the chief inspector, assistant chief inspectors and district inspectors of the Bureau of Locomotive Inspection of the Interstate Commerce Commission to $7,500, $6,000 and $4,000, respectively.

EXAMINER DISQUE has recommended to the Interstate Commerce Commission, in a proposed report, that fourth section relief be granted to the Southern Pacific Lines to enable them to adjust rates between New York, Baltimore, Md., and California so as to compete to some extent with water lines through the Panama Canal.

The Thomas Family Completes A Century

Conover A. Thomas, locomotive engineman on the Pennsylvania, hauling Washington-New York express trains, completed last Saturday 52 years of railroad service; and at the same time completed 100 years' service of himself, his father and his grandfather. Mr. Thomas is now retiring on pension having reached the age of 70. His grandfather began work for the Camden & Amboy, now a part of the Pennsylvania System, in 1830. He spent more than 20 years in the service. His son, Charles P. Thomas, father of Conover, served 55 years in a clerical capacity on the Trenton division of the Pennsylvania. Earl H. Thomas, son of Conover, is a conductor and had charge of the train on his father's last run. This representative of the fourth generation has been a Pennsylvania employee 20 years; and the four together have been a total of 147 years of railroad service.

Clerks' Bank Closed

The Brotherhood of Railway Clerks' National Bank at Cincinnati, Ohio, was closed on June 26 and Ira Fulton, a National Bank examiner, was appointed receiver by the comptroller of the currency. The interest rate paid on deposits had been increased recently from 4 per cent to 5 per cent and after the election of two new officers on June 23 depositors withdrew more than $1,000,000 out of total deposits estimated at about five times that amount. The bank, the majority of whose stock was owned by the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, was established in 1922.

St. Louis Opens Municipal Bridge to Railway Use

Use of the railroad deck of the Municipal bridge over the Mississippi river at St. Louis, Mo., by the Terminal Railroad Association was authorized on June 25 by the Board of Aldermen of that city. The upper deck of the Eads bridge, which is now used by the Terminal Railroad Association, will be given over to non-commercial vehicles and those not carrying passengers for hire, a concession for which the city will pay the railroad $140,000 per year. Street cars, motor coaches and vehicles which carry freight for hire will be required to pay tolls.

The agreement between the railroad and the city provides for the construction of five new railroad approaches to the Municipal bridge in East St. Louis, Ill., which will require an expenditure of about $3,250,000. Funds for this construction will be borrowed from the railroad by the city, the latter redeeming the obligation by tolls which the Terminal will pay for the use of the Municipal bridge. The Terminal has guaranteed the city a minimum toll payment of $500,000 per year, which will be made up of collections of $1 for loaded freight cars, $1.50 for passenger coaches, $2 for locomotives and 50 cents for empty freight cars.

Penn. R. R. Stock Offering to Employees Oversubscribed

Employees of the Pennsylvania Railroad have heavily over-subscribed the further allotment of 360,000 shares of stock which they were given the opportunity to purchase this spring, at par, i.e. $50 a share. The stock has been selling in the market at upwards of $70. Subscriptions to the allotment closed June 16. Vice-president A. J. County stated that 72,460 separate applications were received for a total of 580,097 shares. Employees applying for from one to seven shares, he explained, will receive the full amount subscribed. Those applying for from eight to twenty shares will receive seven shares each.

Under the terms of the offer employees were at liberty to apply for any number of shares from one to twenty, the management reserving the right to reduce the larger amounts in the event of over-subscription. All stock must be paid for on the installment plan, by monthly payroll deductions of $2, $5 or $10 per share, at the option of the employee.

Work Begun on Montreal Terminal Project

Demolition of buildings on the site of the main viaduct which will provide train connection between Victoria Bridge and the new central passenger terminal of the Canadian National in Montreal is proceeding with dispatch and the ground is being cleared for the commencement of construction.

The cost of the passenger terminal developments, together with the viaduct which will provide ingress and egress between the new station and the South Shore of the St. Lawrence river will be in the neighborhood of $25,000,000, or approximately one-half of the vote of $50,000,000 authorized by Parliament for the work of the Montreal Terminal. This figure will, of course, include the cost of the station and office building which will be constructed at the central passenger area. The balance of the $50,-

000,000 approved by Parliament will be required for construction of connecting lines outside of the city area, and for the elimination of many grade crossings, provision of adequate freight service facilities and operating requirements.

Consolidation and Bus Legislation Uncertain

As this issue of the *Railway Age* goes to press there is still uncertainty as to whether Congress will reach a final vote before its adjournment on either the Couzens railway unification resolution or the Parker bill for the regulation of interstate motor bus transportation.

After the bus bill had been made the unfinished business of the Senate it was displaced on June 25 to make way for a deficiency appropriation bill. On June 27 it was again made the unfinished business and there was some debate on it but it was again displaced by other bills. Senator Couzens, chairman of the Senate committee on interstate commerce, tried to obtain an agreement for a vote on the bill on June 30, saying that if it were displaced there would be a filibuster against it and it would not be passed, but a motion to take up the appropriation bill prevailed by a vote of 30 to 27. Senator Couzens said that those who are opposing the bill are those who are standing for the interest of the railroads, while Senator Dill, of Washington, insisted that the bill was being pressed and advocated by the railroads and established bus lines in an effort to prevent further competition. Senator Couzens said this is not true of the bill as it was amended by his committee and that "nearly every railroad" was now opposing the bill.

There had been some discussion of the Couzens resolution in the House, where its advocates strongly opposed what they asserted to be the plan of the leaders to confine any vote taken in the House to the substitute resolution reported by the committee on interstate and foreign commerce. It was understood the leaders would make every effort to keep the resolution from coming up at all, while the advocates of the Couzens resolution were threatening to block adjournment.

During the discussion there were made public several letters addressed to members of Congress by representatives of the railway labor organizations urging the passage of the Couzens resolution. A letter signed by the 22 associated railway labor organizations said that the object was to suspend action by the commission until next March to give Congress time to take action on the general question of railway consolidations and that any amendment or change in the resolution as passed by the Senate would "mean defeat of the entire question and undoubtedly irreparable injury will ensue before Congress reconvenes." The request for support of the Couzens resolution was made "irrespective of any report which may be made by the committee on interstate and foreign commerce and notwithstanding any substitute or amendment which may be proposed on the floor of the House." The point was made that executive sessions only were held by the House Committee and that the representatives of the railway employees were not given a hearing before it.

D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen and chairman of the Railway Labor Executives' Association, also addressed a letter to all members of Congress urging passage of the resolution "to stop further consolidations of railroads until Congress can enact legislation necessary to protect the public interest." He asserted that "hundreds of railway employees, in order to earn a living have been forced to sacrifice their savings, move their homes and seek work elsewhere."

The Canadian Roads in May

Operating net of the Canadian Pacific for May totaled $1,226,267, a reduction of $1,303,491, in comparison with the $2,529,758 net shown in that month in 1929. For May gross revenues were $14,695,839, a reduction on a like comparison of $3,236,513, while operating expenses at $13,469,572 showed a reduction of $1,933,021.

For the five months of the company's fiscal year ended with May, the showing is similar. Net at $6,585,971, compares with $13,363,906, a reduction of $6,777,933, while gross for that period is $15,720,022 lower at $67,604,133, and operating expenses at $61,018,161 are reduced by $8,942,088.

The following table shows gross earnings, expenses and operating net for the month of May, with comparisons:

	MAY		
	1930	1929	Decrease
Gross	$14,695,839	$17,932,352	$3,236,513
Exp.	13,469,572	15,402,593	1,933,021
Net	$1,226,267	$2,529,758	$1,303,491
	FIVE MONTHS ENDING MAY		
	1930	1929	
Gross	$67,604,133	$83,324,155	$15,720,022
Exp.	61,018,161	69,960,249	8,942,088
Net	$6,585,971	$13,363,906	$6,777,933

Net revenue of the Canadian National for May, including the Central Vermont, shows a decrease of $956,803 compared with the same period of last year, at $2,309,131 against $3,265,934 in 1929.

Gross revenues were lower by $4,298,256, being $19,013,606 compared to $23,311,862 in the 1929 period.

The decrease in gross was however minimized by a substantial reduction in operating expenses, which were $3,341,453 lower, being $16,704,474 as against $20,045,927 in May, 1929.

The Canadian National have a value well over two billions of dollars, according to a financial statement of the system prepared by the Dominion Bureau of Statistics. The grand total of assets is placed at $2,333,878,000 at the end of 1929, an increase of $310,019,000 since 1923.

The statement of the long-term debt indicates principal and unpaid accrued interest amounting to $2,431,244,000. Of this amount $1,122,559,000 is owed to the public, and the balance of $1,308,684,000 is made up of appropriations and loans by the Dominion Government. During 1929 the principal and interest total was increased by $163,138,000.

The deficit on 1929 operations amounted to $46,099,000, compared with $29,868,000 in 1928. Operating revenues fell off from $304,591,000 to $290,496,000, the statement shows, while operating expenses at $248,632,000 were only $1,000,000 less than the previous year. Net operating revenues amounted to $41,864,000, while interests charges were $78,194,000.

M. C. B. & S. Convention Program

The second annual convention of the Master Car Builders' and Supervisors' Association will be held in the Crystal ballroom of the Book-Cadillac hotel, Detroit, Mich., Tuesday, Wednesday and Thursday, August 26, 27 and 28, 1930. The program is as follows:

TUESDAY, AUGUST 26

10:00 a.m.—Opening exercises
Address by President C. J. Wymer, superintendent of the car department, Chicago & Eastern Illinois

10:30 a.m.—Address by R. H. Aishton, president, American Railway Association

11:00 a.m.—Address by T. C. Powell, president, Chicago & Eastern Illinois

11:30 a.m.—Report of Secretary-Treasurer A. S. Sternberg, master car builder, Belt Railway of Chicago.
Report of Membership Commitee and presentation to the winner of the prize awarded for securing the largest number of new members during the past year, by Vice-President F. A. Starr, supervisor of reclamation, Chesapeake & Ohio

2:00 p.m.—Report of Advertising Committee by Chairman H. A. Sigwart, Missouri Pacific

2:20 p.m.—Individual paper on "How Can the Mechanical Departments of the Railroads Improve the Service Rendered to Private Line Cars," by J. C. Scheidel, district superintendent of car repairs, North American Car Corporation

3:00 p.m.—Report of Committee on Wheel Failures, by Chairman W. J. McClennan, general shop inspector, New York Central

3:40 p.m.—Individual paper on "Systematic Repairs to Freight Cars," by W. E. Dunham, superintendent of the car department, Chicago & North Western

4:20 p.m.—Report of Billing Section, A. R. A. Rules, E. S. Swift, chief A. R. A. clerk, Wabash

WEDNESDAY, AUGUST 27

9:00 a.m.—Address by C. R. Megee, district manager, A. R. A. Car Service Division

9:30 a.m.—Address on "Bureau of Explosives Rules," by W. S. Topping, representing the bureau

10:15 a.m.—Open discussion of A. R. A. loading rules, to be led by M. E. Fitzgerald, general car inspector, Chicago & Eastern Illinois. During the discussion E. Dahill, chief engineer of the A. R. A. Freight Container Bureau, will present some moving pictures dealing with the subject.

11:00 a.m.—Report of A. R. A. Committee and discussion of A. R. A. interchange rules, Chairman M. E. Fitzgerald, general car inspector, Chicago & Eastern Illinois

1:30 p.m.—Continued discussion of A. R. A. Rules

3:15 p.m.—Report of Committee on Formulation of a Standard Method of Selecting Cars for Commodity Loading; Recommendation of a standard and conspicuous commodity card to indicate the commodity for which the car is suitable

4:00 p.m.—Open discussion to be participated in by all chief interchange inspectors on reasons for local interchange agreements deviating from the A. R. A. interchange rules

THURSDAY, AUGUST 28

9:00 a.m.—Address on "Safety," by W. S. Smith, safety department, Ford Motor Company

9:30 a.m.—Individual paper on "Air Brakes," by C. R. Childs, air brake supervisor, New York, Chicago & St. Louis

10:00 a.m.—Individual paper on "Draft Gears," by E. J. Robertson, superintendent of the car department, Minneapolis, St. Paul & Sault Ste. Marie
10:45 a.m.—Individual paper on "Relations between the Car and Stores Departments," by F. E. Cheshire, general car inspector, Missouri Pacific
11:15 a.m.—Report of Committee on Elimination of Oil and Grease from House Cars and Reduction in Freight Claims Generally, by W. T. Westall, special assistant to superintendent of rolling stock, New York Central
1:30 p.m.—Report of Auditing Committee
1:35 p.m.—Report of Nominating Committee, E. H. Weigman, chairman
1:45 p.m.—Open discussion on A. R. A. Rule 66
2:30 p.m.—Report of Committee on Elimination of Damage to Automobile Car Floors by Automobile Shippers, Chairman M. J. Mills, master car builder, Pere Marquette
3:15 p.m.—Election of officers and closing business.

Harrison Says Consolidation Plan Is Misunderstood

"No actual consolidations of railroads have yet taken place, despite the wide discussion of 'consolidations,'" says Milton W. Harrison, president of the National Association of Owners of Railroad and Public Utility Securities, in a recent statement. "Congress provided that consolidations could take place only after the Interstate Commerce Commission presented its plan grouping the railroads into a few strong, well-balanced systems. As that plan was not presented until last December, there has been no opportunity to complete any of the so-called 'consolidations,'" he said.

"This generally accepted fallacy is typical of the misconceptions surrounding the railroad problem," he continued. He said that Congress had provided a form of control by lease or stock ownership that fell short of consolidation but secured many of its benefits. Under this plan more than 51,000 miles of line, or more than 20 per cent of the country's trackage, has been acquired by stock ownership or lease. Another 25,000 miles have been acquired under provisions of the Transportation Act that permit one carrier to acquire another instead of constructing a new line.

"At a moment when railroad consolidations are being discussed by the uninformed as if they were an entirely new departure, it is a fact that the independence of American railroads is largely a myth," according to Mr. Harrison. Since 1920 the Interstate Commerce Commission has approved the absorption of 77,000 miles of line by other railroads. Mr. Harrison further asserted that only 54 of the 168 Class I railroads can be called wholly independent.

"Only a small proportion of the country's railroad mileage is being operated entirely independent of control," he continued. "A large part of the independent mileage is made up of short lines. In some instances, large trunk lines now own or control practically all of the major roads allocated to them in the Commission's plan. A consolidation proceeding in such instances merely would wipe out the framework of subsidiary corporations and permit the formation of one new corporation to take their place. Operations would continue as at present, except that much duplication of effort would be eliminated."

T. P. & W. Strike Ended

A strike on the Toledo, Peoria & Western, which has technically been in existence for seven months, or since November 13, 1929, when 500 conductors, trainmen, firemen, yardmen, telegraphers and maintenance of way employees walked out, was settled on June 25. An agreement was signed between C. B. Ullrick, assistant to the president of the railroad, and representatives of the Order of Railway Conductors, the Brotherhood of Railroad Trainmen, the Brotherhood of Locomotive Firemen and Enginemen, the Order of Railroad Telegraphers, the Brotherhood of Maintenance of Way Employees and six mechanical workers' organizations.

The strike was originally precipitated by the management's refusal to deal with the six shop-crafts organizations, the shop at East Peoria, Ill., not having been unionized since the shopmen's strike of 1922. The agreement provides that neither the railroad nor the representatives of any class of employees shall be obligated to participate in conferences other than those between the railroad and one organization of employees. Conferences between the railroad and representatives of more than one class of employees, or between the railroad and more than one organization of the same class of employees may be held if agreeable to all parties to the proposed conference. It is also provided that the principle of making contracts with the representatives of the majority of the employees in service in a given class shall be regarded as the sound basis for collective bargaining.

Employees of the road who left the service on November 13 are to be re-employed as conditions may warrant, subject to the rights of those now in service, but former employees who have been guilty of conduct of a nature giving grounds for dismissal are not to be re-employed. Conferences between the management and any class of employees are to be arranged in accordance with the methods provided by the Railway Labor Act.

The agreement also recognizes the right of the individual employee to affiliate or decline to affiliate with any organization of employees he may see fit, without coercion.

Meetings and Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 5605, Grand Central Terminal Building, New York City. Next meeting, Toronto, Ont., 1931. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, Crane Company, 836 So. Michigan Blvd., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, October 7-9, 1930, Atlantic City, N J.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—J. H. Hawley B. R. & P. Ry.) E. Salamanca, N. Y.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.
Division 1.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.
Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.
Medical and Surgical Section—J. C. Caviston, 30 Vesey St., New York.
Protective Section.—J. C. Caviston, 30 Vesey St., New York.
Safety Section.—J. C. Caviston, 30 Vesey St., New York.
Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York. Next convention, Sept. 16-19, 1930, Royal York Hotel, Toronto, Ont.
Division II.—Transportation—G. W. Covert, 59 East Van Buren St., Chicago.
Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.
Division IV.—Engineering.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting, March 10-12, 1931, Palmer House, Chicago. Exhibit by National Railway Appliances Association.
Construction and Maintenance Section.—E. H. Fritch. Next meeting, March 10-12, 1931, Palmer House, Chicago.
Electrical Section.—E. H. Fritch.
Signal Section.—H. S. Balliet, 30 Vesey St., New York. Next meeting Arlington Hotel, Hot Springs, Ark., September 9-11 1930.
Division V.—Mechanical.—V. R. Hawthorne, 59 East Van Buren St., Chicago.
Equipment Painting Section.—V. R. Hawthorne, 59 East Van Buren St., Chicago. Next convention, September 9-11, 1930, Congress Hotel, Chicago. Exhibit by Supply Men's Association.
Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y.
Division VII.—Freight Claims.—Lewis Pilcher, 59 East Van Buren St., Chicago. Next meeting, 1931, Louisville, Ky.
Division VIII.—Motor Transport.—George M. Campbell, 30 Vesey St., New York, N. Y.
Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Annual convention, October 21-23, 1930, Brown Hotel, Louisville, Ky. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. W. Large, Gen. Agri. Agt., C. R. I. & P. Ry., Chicago, Ill. Annual meeting, 1931, Philadelphia, Pa.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association. Division IV.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting March 10-12, 1931, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITOR'S ASSOCIATION.—Miss E. Phillips, N. Y. N. H. & H. Magazine, New Haven, Conn. Next meeting, June, 1931, Philadelphia, Pa.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C., M., St. P. & P. R. R., 11402 Calumet Ave., Chicago. Annual convention, September 10-12, 1930, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foreman's Association.—Acting Secretary: H. W. Leighton, Harry W. Leighton Co., 565 W. Washington St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Paul D. Mallay, Johns-Manville Corp., 292 Madison Ave., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1104 Chandler Building, Washington, D. C. Next meeting, January 27-29, 1931, Philadelphia, Pa.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, June, 1931, Toronto, Ont.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Station, Chicago. Annual

convention, October 21-24, 1930, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, Transportation Building, Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—J. W. Fogg, MacLean-Fogg Lock Nut Co. 2649 N. Kildare Ave., Chicago. Meets with International Railway General Foremen's Association.

BOILERMAKERS' SUPPLY MEN'S ASSOCIATION.—Frank C. Hasse, Oxweld R. R. Service Company, 230 N. Michigan Ave., Chicago. Meets with Master Boiler Makers' Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. H. Lawrence, Johns-Manville Corp., 41st St. and Madison Ave., New York. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 208 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, 2nd Monday in each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, Chicago & Alton, 3001 W. 39th Place, Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 So. Main St., Los Angeles, Cal. Regular meetings, second Monday of each month, except July, August and September, Room 299, 610 So. Main St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegman, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August, American Hotel Annex, 6th and Market Sts, St. Louis, Mo.

CENTRAL RAILWAY CLUB OF BUFFALO.—W. H. Newman (President), New York Central Railroad, Buffalo, N. Y. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTOR'S AND CAR FOREMEN'S ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 453 E. 6th St., Cincinnati, Ohio. Meetings 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual meeting, September 23-25, 1930, Hotel Morrison, Chicago. Exhibit of International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—J. H. Jones, Crucible Steel Company of America, 650 Washington Blvd., Chicago. Meets with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. T. Winkless, Room 700, La Salle Street Station, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn. Annual Convention, September 16-19, 1930, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—L. R. Pyle, Locomotive Firebox Co., 310 So. Michigan Ave., Chicago. Meets with international Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Exhibit by Boiler Makers' Supply Men's Association.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 South Morgan Street, Chicago. Next convention August 26-28, 1930, Book Cadillac Hotel, Detroit. Exhibit by Supply Men's Association.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York, Annual Convention, November 12-15, 1930, Charleston, S. C.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy. M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: W. A. Booth, Can. Nat. Rys., Montreal, Que., Can. Annual Congress, September 29-October 4, William Penn and Fort Pitt Hotels, Pittsburgh, Pa.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—E. Sumner (President), Asst. to Gen. Supt, M. P. Penna. R. R., Philadelphia, Pa. Regular meetings, 3rd Friday in month, except June, July and August, 29 W. 39th St., New York City.

PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1124 Woodward Building, Washington, D. C. Annual convention, 1931, Mexico City, Mex.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1112 Shoreham Building, Washington, D. C. Next meeting, November, 1930, Commodore Hotel, New York, N. Y.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1841 Oliver Building, Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Next meeting, October 21-23, 1930, St. Louis, Mo.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division and Motor Transport Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division 1.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association. Next meeting, September 16-18, 1930, Hotel Stevens, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Drawer 24, M. P. O., St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, June, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. Rv., Atlanta, Ga. Next meeting, July 17, 1930, Mobile, Ala.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Inc., 667 The Rookery Building, Chicago. Meets with Master Car Builders' and Supervisors' Association.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., Carbon & Carbide Building, Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, O. Annual meeting, September 23-26, 1930, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 343 So. Dearborn St., Chicago. Regular meetings 3rd Monday each month, except June, July and August.

LITTLE GIANT ELECTRIC TOOLS.—A 70-page catalogue, designated No. 898, has been issued by the Chicago Pneumatic Tool Company, New York, which includes illustrations and descriptions of the complete line of Little Giant electric tools manufactured by this company. The principal tools presented in the new catalogue include drills, reamers, screw drivers, nut runners, tappers, grinders, screw spike drivers and track and bonding drills. These tools are designed for operation with universal, alternating and direct current.

Traffic

H. W. Burnham has been appointed controller in charge of accounts of the United States Freight Company and its subsidiary companies, with office at New York.

The Leavenworth & Topeka, operating 37 miles of line between Leavenworth, Kan., and Meriden, has asked the Kansas Public Service Commission for permission to abandon train service. Abandonment was authorized by the stockholders of the road on May 20.

Automobiles as Baggage

The Pennsylvania announces that on the "Sea Gull," through night train between Pittsburgh, Pa., and Atlantic City, N. J. (about 410 miles), automobiles will now be taken as baggage, these trains being provided, on sufficient notice, with end-door cars into which automobiles may be directly driven. At the Pittsburgh end of the line cars will be loaded at East Liberty, and at Atlantic City they will be loaded at Chelsea Yard. They must be delivered by or before 6 p.m.; the excess baggage charge will be $45, and the passenger must present three tickets.

Reduced Fares for Bobby Jones Home-Coming

Reduced fares for the round trip from Atlanta and Athens, Ga., to New York and return for the golf fans of those cities who propose to meet "Bobby" Jones on his return from England after winning the British amateur and open golf championships are provided for in tariffs which have been filed with the Interstate Commerce Commission by the railways involved. They proposed a rate of $50.75 from Atlanta, a reduction of $11.81 from the regular rate; and $47.44 from Athens, a reduction of $10.72; to be sold June 30 and good until July 8.

New York Harbor Lighterage Hearings at Newark

The Interstate Commerce Commission opened hearings on June 26 in Newark, N. J., on the petition of New Jersey industrial interests for the abolition of free lighterage in New York harbor. Free lighterage of freight is provided within certain limits of New York harbor at the same rates as those maintained for on-track delivery at metropolitan North Jersey points, and the Jersey interests asserted that their rates are maintained at an unfairly high level to provide this service which they cannot use. The petition is strenuously opposed by representatives of businesses located in the metropolitan district east of the Hudson river.

Central Western Shippers' Board

Industries reporting to the Central Western Shippers' Advisory Board at Idaho Falls, Idaho, on June 20, estimated a decrease of less than one per cent in

railroad shipments in July, August and September, 1930, as compared with the same months in 1929. This advisory board district includes Nebraska, Wyoming, Colorado, Utah and Idaho.

Increases in car loadings are expected for grain, mill products, fresh fruits and vegetables, poultry and dairy products, highway and building materials, agricultural implements, automobiles, chemicals and canned foods. The reports predicted decreases in car requirements for coal and coke, ore and concentrates, hay, straw and alfalfa, livestock, salt, lumber, petroleum, iron and steel, and machinery other than that for farms use. Speakers at the meeting included H. J. Plumhof, general manager of the Oregon Short Line and H. G. Taylor, manager, Public Relations Section, Car Service Division, A. R. A.

California Deciduous Fruit Rates Restored

The Interstate Commerce Commission has authorized the railroads to file tariffs restoring the rates on deciduous fruits from California to eastern destinations which were in effect before it ordered them reduced under the Hoch-Smith resolution in a decision which was recently held invalid by the Supreme Court. The commission had reduced the principal rate from $1.73 to $1.60 per hundred pounds. The California Growers' & Producers' League has asked the commission to re-open the case and for leave to file an amended complaint in which it asks a reduction to $1.44. The railroads filed a reply asking that the petition be denied and the case dismissed on the record made on the ground that the rates have been found by the commission to be lawful under section 1 of the interstate commerce act and that what is sought is simply a reconsideration of the commission's repeated findings that the rates assailed are not unreasonable. The California railroad commission, which was an intervener in the case, has joined the complainant in asking that the case be reopened.

Study Effects of Trucks on Marketing of Produce

The constantly increasing use of the motor truck in transportation of farm products and its far-reaching effect upon the farm marketing system are engaging the attention of the Bureau of Agricultural Economics, U. S. Department of Agriculture, which is making an extensive study of the motor truck in its relations to marketing. The bureau's survey consists of determining the importance of truck receipts of the fruit and vegetable supply in some of the leading market centers and in ascertaining the volume of truck movement as compared with movements by rail and boat from representative producing areas. It will determine also the situation with regard to the re-distribution of produce from the large market centers to smaller communities in their trade areas.

Preliminary surveys by the bureau show that many farmers who formerly hauled or shipped produce to market centers now sell direct to the so-called truckmen-merchants. These itinerant merchants buy supplies on speculation and may haul to one of a half dozen or more consuming markets within a radius of 200 to 300 miles; or they may peddle their loads in small towns or rural districts. Truckmen-merchants in many instances make it possible for producers to sell products of a grade and condition which it would be impractical to ship by rail.

Produce handlers in market centers complain that the marketing of these supplies has a depressing effect on prices of shipped-in produce, since it frequently results in an over-supply at the market, and at all times injects an unknown quantity into the market situation, according to a statement issued by the department. The merchants and shippers who hire truckmen to haul their shipments very often do not decide until the last moment in what market they will sell. Even when the market destination has been determined in advance by the merchant-truckman or shipper, the time required for transportation is so short and control of shipments is so scattered that there is little opportunity to obtain advance information as to the volume of prospective receipts.

The motor truck has extended the local supply area of a market beyond the distance formerly within wagon haul and many specialized crops are now being hauled by truck from producing areas for distances up to 600 miles. The truck eliminates much of the handling and re-hauling of the produce on farms and in markets. The business has increased tremendously in recent years, and furnishes an increasing proportion of the market supplies. The bureau is compiling the daily motor-truck receipts at several markets, and it is hoped that the present survey will indicate methods of developing more complete market news reports on this phase of the produce business.

The bureau's preliminary surveys of the motor trucking situation deal with the movement of fruits and vegetables from Delaware and the Eastern Shore of Maryland and Virginia; in southern Indiana and southern Illinois; in western New York; and in the Cumberland-Shenandoah sections of Maryland, Pennsylvania and West Virginia. The bureau, cooperating with the New Jersey State College of Agriculture and the New Jersey State Department of Agriculture, has also surveyed the motor-truck as a carrier of fruits and vegetables to Greater New York.

In the bureau's current survey, the representatives of its various branch offices in the leading market centers report the volume and sources of trucked-in supplies. This will disclose the principal commodities hauled by truck, and the principal areas of origin of each product. The bureau will attempt to estimate approximately the proportion of truck receipts from market garden areas which formerly hauled products to market by wagon. The bureau will endeavor also to ascertain the attitude of the wholesale trade to the trucking business, and the effect of trucking on marketing conditions.

Foreign

C. B. Byles Retires from New South Wales Post

C. B. Byles, signal engineer of the New South Wales Government Railways, is to retire from that office on July 1. Mr. Byles, formerly for ten years signal engineer of the Lancashire & Yorkshire, in England, has been chief signal officer of the new South Wales Lines since 1911. He is the author of "First Principles of Railway Signaling" (London, 1910).

British Government Abandons Channel Tunnel Scheme

After careful consideration of the project from every possible angle, says the Railway Gazette (London), the British government, on June 5, definitely rejected the proposal for the construction of a railroad tunnel under the English Channel. The decision reached by Prime Minister MacDonald and the members of his cabinet is summed up in the following words, quoted from the official statement made to Parliament: "The whole matter was examined by the government, which, in addition to economic and military considerations, reviewed possible diplomatic reactions. Having regard to the element of doubt as to the feasibility of construction, the weakness of the economic case, the great cost, the long period before which the capital expended could fructify, and the small amount of employment provided, the government have come to the conclusion that there is no justification for a reversal of the policy pursued by successive governments for nearly 50 years in regard to the Channel Tunnel."

Althought the idea of an under-sea railway connection between Great Britain and France is nearly half a century old, and has been agitated with varying degrees of enthusiasm on a number of occasions within that period, the sentiment in favor of such a tunnel has appeared to be particularly strong during the last two years. The proponents of the scheme stressed the economic advantages which might be expected to accrue to Great Britain as a result of a closer connection with the continent and the employment which the construction of such a tunnel would create. Those opposed to the project, on the other hand, were able to point out that both of these arguments dealt with future estimates and probabilities and not with present facts. In addition, opponents of the plan emphasized the tremendous cost of the tunnel; the difficulty of financing its construction, in view of the government's desire to make it a private enterprise and the length of time which must ensue before any return on the invested capital could be expected; the military difficulty of defending the tunnel in case of war, and the probable decline of British cross-channel shipping resulting from its operation.

Although a special government committee appointed some months ago re-

ported in favor of the tunnel, the cabinet, after reviewing all the considerations mentioned above, reversed the committee's decision, stating that "No overwhelming case in favor of the construction of the tunnel has been made out on economic grounds."

Egyptian Railway Developments

Maintenance of efficiency and progressive development, as evidenced by new construction and increased comfort of passenger travel, were the main objectives of the Egyptian state railways in 1929, although that year also witnessed the completion of an extensive improvement and renewal program, begun in 1925 with the idea of modernizing the whole system and bringing it up to a standard comparable to European and American roads.

Additions to the system, under consideration or in process of construction, included a new line in the south of Egypt connecting Kosseir on the Red Sea with the main line at Keneh; extensions north and west from Alexandria in the direction of the Tripolitan frontier, and a line through the desert to the east of the river Nile connecting Cairo directly with Suez. A network of narrow gage lines is also to be laid in the Nile delta region to facilitate the movement of cotton and other crops to Alexandria for export and of agricultural produce to the large market towns. New shops, of a more modern and efficient type than those now existing at Boulac, are under construction at Abou-Zaabal.

Service on through de luxe trains from Alexandria and other ports to Cairo and thence to Luxor and Assuan was improved during the year by the introduction of new rolling stock, so that these expresses are now said to be the equivalent of such continental trains as the "Golden Arrow" (London-Paris) and the "Blue Train" (Paris-French Riviera points).

Motor competition has made itself felt in Egypt, as elsewhere, particularly in the suburban areas near Cairo. To combat the loss of passenger traffic from this source, electrification is under serious consideration, and if plans now being drawn up materialize, the eastern and western suburbs of Cairo will be connected by intensive electric service. The Helwan line to the south and the Mataria line to the northeast are also included in electrification plans, with the idea of running trains between these points through a central terminal at Cairo. In rural districts, where traffic is light and highway competition less serious, steam rail cars have been found effective in holding down operating expenses and in meeting such competition as does exist.

C. P. Demolition Tools and Sheeting Driver.—A 12-page booklet, designated No. 865, has been issued by the Chicago Pneumatic Tool Company, New York, describing and illustrating the construction and wide application of its air-operated demolition tools and sheeting driver.

Equipment and Supplies

Locomotives

The Peiping-Mukden (Tientsin, China) is inquiring for six locomotives of the 4-6-2 type and 14 locomotives of the 2-8-2 type.

Iron and Steel

The Southern has ordered 300 tons of steel for a bridge in Kentucky, from the Mt. Vernon Bridge Company.

The New York Central has ordered 150 tons of steel for a bridge near Albany, N. Y., from the American Bridge Company.

The Pennsylvania has ordered 350 tons of bridge steel from the Belmont Iron Works, Philadelphia, Pa., and has also ordered 300 tons for a bridge at Xenia, Ohio, from the Bethlehem Steel Company.

Freight Cars

The Electro Metallurgical Company has ordered one steel hopper car of 50 tons' capacity from the American Car & Foundry Company.

The Rio Grande do Sul is inquiring for 39 coal cars of 30 tons' capacity. Dr. Octacilio Pereira, Porto Alegre, Rio Grande do Sul, Brazil, is general manager.

The American Agricultural Chemical Company, New York, has ordered three tank cars of 70 tons' capacity, for carrying sulphuric acid, from the General American Tank Car Corporation.

The Western Electric has ordered 10 flat cars of 100 tons' capacity from the Koppel Industrial Car & Equipment Company. Inquiry for this equipment was reported in the *Railway Age* of April 26.

The Chicago & North Western has ordered 10 steel underframe flat cars, 46 ft. long and of 70 tons' capacity, from the American Car & Foundry Company. Inquiry for these cars was reported in the *Railway Age* of April 26.

Signaling

The St. Louis (Mo.) Board of Public Service plans to take bids for an interlocking plant at the crossing of the tracks at the southern approach to the Municipal bridge and those of the Missouri Pacific in St. Louis. The plant will cost about $125,000.

Central Traffic Control on B. & O.

The Baltimore & Ohio has ordered from the General Railway Signal Company apparatus for a duplex central line traffic control system for installation on 43 miles of single track line between Gilkeson, Pa., and Wheeling, W. Va. The control machine will have 26 working levers and be supplied with a recorder. It will be located at Washington, Pa. The order includes central station equipment, 86 color position light high signals, 23 color position light dwarf signals, 23 Model 5 D, dual-control switch machines, 28 field communication cabinets complete with instruments wired at the factory, 6 spare field communication cabinets complete with instruments, 109 type K polar relays, 731 type K neutral relays, 79 type H relays and miscellaneous signal material. With this system an indication from any station can be received simultaneously with the sending of an outgoing control. All wayside signals will be normally lighted from an a.c. source.

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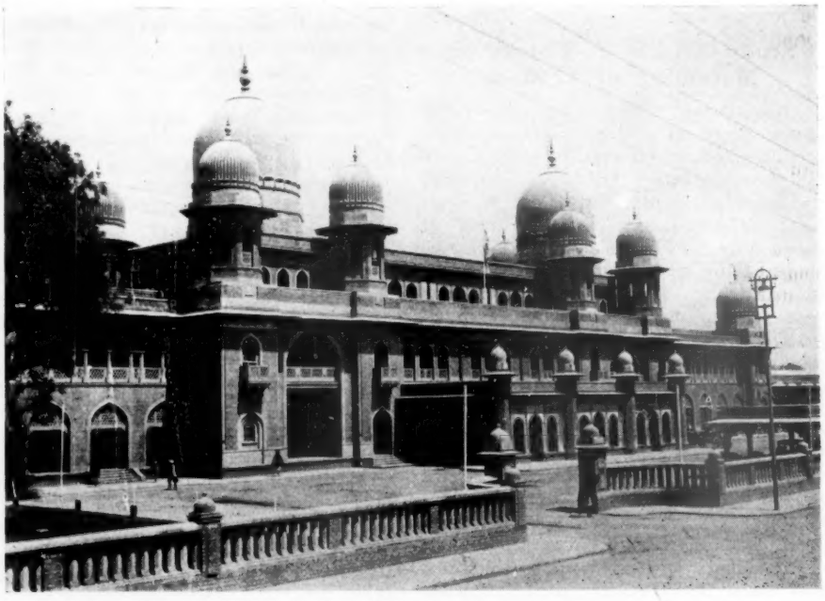

The New Cawnpore Central Station, Recently Opened by the Indian State Railways

Supply Trade

George E. Watts, Atlanta, Ga., has been appointed sales representative of the **J. S. Coffin, Jr., Company,** Englewood, N. J.

J. L. Van Nort has been promoted to sales engineer of the Boston office of the **Reliance Electric & Engineering Company,** Cleveland, Ohio.

B. Cheacock, first vice-president of the **Caterpillar Tractor Company,** has been elected president, succeeding **A. C. Force,** who has been elected chairman of the executive committee of that company. Headquarters of the operating personnel, which are now located at San Leandro, Cal., will be moved to Peoria, Ill., and all tractor manufacturing will be concentrated at the latter point, enabling the use of the facilities at San Leandro. It is expected that the complete removal of the operating department to Peoria will be completed before January 1, 1931.

Effective July 1, **William R. Burrows,** vice-president of the **General Electric Company,** will succeed vice-president **Cummings C. Chesney** as chairman of the manufacturing committee of that company. Mr. Chesney, who is retiring at his own request, was one of the pioneers in the electrical industry, having been associated in early life with the late William Stanley in the development of the transformer. He has been connected with the General Electric and Stanley Companies for more than 42 years, being elected a vice-president on May 25, 1927. Mr. Burrows, who has been with the General Electric Company and its predecessors for nearly 40 years, was active in the development of the incandescent lamp and was responsible for many improvements in methods of lamp manufacturing. In 1925 he was appointed associate manager of the incandescent lamp department of the General Electric Company, and on May 25, 1927, was advanced to vice-president of that company.

Obituary

A. L. Greenabaum, vice-president of the O. F. Jordan Company, East Chicago, Ind., who died at Chicago on June 4, was born at Wilmington, Del., on January 20, 1880. Mr. Greenabaum served in the United States Navy during the Spanish-American war and following that service he was employed by various construction contractors and for a time was in business for himself. In 1914 he entered the service of the Chicago, Rock Island & Pacific and was subsequently advanced to supervisor of work equipment. He was appointed general sales manager of the O. F. Jordan Company on September 15, 1920, being elected vice-president of that company in 1928. Mr. Greenabaum was a past president of the National Railway Appliances Association.

Construction

CANADIAN PACIFIC.—A contract for the construction of a two-story addition to the station at Calgary, Alta., to house telegraph facilities, has been awarded to Bennett & White, Calgary. The cost of the addition will be in the neighborhood of $35,000.

MISSOURI-KANSAS-TEXAS.—The War department has approved the plans prepared by this company for the construction of a bridge over the Missouri river at Boonville, Mo.

NEW YORK, PITTSBURGH & CHICAGO.—The Interstate Commerce Commission will hear oral argument at Washington on July 15 on this company's application for authority to construct a new line from Allegheny to Easton, Pa.

VIRGINIAN.—The contract for the construction of seven miles of the Guyandot river line from M. P. 26 to M. P. 33 awarded by this company's subsidiary, the Virginian & Western, to the Walton Sudduth Company, Inc., Bluefield, W. Va., and reported in the *Railway Age* of June 14, involves the construction to subgrade of this entire section of the new line. The work includes approximately 400,000 cu. yd. of excavation, the placing of about 8,000 cu. yd. of concrete and the boring of a 1,300-ft. tunnel. The amount of the contract, which does not cover steel superstructures for bridges, is approximately $630,000. The contract awarded by the Virginian to Boxley Bros. Company, Inc., Orange, Va., for the construction of a one-mile connection between the terminus of the Virginian at Deepwater, W. Va., and the Kanawha & Michigan, and reported in the *Railway Age* of June 21, includes the construction to subgrade of the entire line and the substructure for a bridge over the Kanawha river. The amount of this contract is $325,000.

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The "Senator" on the New York, New Haven & Hartford near Canton Junction, Mass.

Financial

ALGERS, WINSLOW & WESTERN.—*Acquisition.* — The Interstate Commerce Commission has authorized this company to pay the Patoka Coal Company $237,050 for its line of railroad in Pike County, Ind., the property to be offered, jointly or separately, to the Big Four and the Southern Railway on terms subject to the approval of the Commission. Two extensions to the line, to cost $187,666 and $155,690 respectively, are also authorized.

ATLANTIC COAST LINE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority for the certification and delivery to its treasury of $1,150,876 of general unified mortgage 4½ per cent bonds, to reimburse the treasury.

BALTIMORE & OHIO.—*Extension of Time for Disposal of Western Maryland Stock.* —The Interstate Commerce Commission has granted this company an extension of six months in which to dispose of its stock in the Western Maryland.

BOSTON & ALBANY.—*Bonds.*—J. P. Morgan & Co., the First National Bank and the National City Company are offering $5,700,000 of 4¼ per cent improvement bonds of 1928 of this company to mature in 1973. The issue is priced at 93 to yield approximately 4.6 per cent and is guaranteed by the New York Central.

COLORADO & SOUTHERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $20,000,000 of general mortgage 4½ per cent bonds, to reimburse the treasury. It is proposed to sell them at not less than 93 and interest to J. P. Morgan & Co., and the First National Bank of New York.

DENVER & SALT LAKE.—*Acquisition.*—The Interstate Commerce Commission has assigned for oral argument on July 14 the application of the Denver & Rio Grande Western for authority to acquire control of the D. & S. L.

ERIE.—*Equipment Trust.*—Drexel & Co. are offering $6,690,000 of this company's 4½ per cent equipment trust of 1930 certificates, maturing in installments from 1930 to 1945, at prices to yield 3.50 per cent to 4.625 per cent.

MICHIGAN CENTRAL.—*Bonds.*—J. P. Morgan & Co., the First National Bank and the National City Company are offering $7,634,000 of refunding and improvement series C 4½ per cent bonds of this company maturing in 1979 at 98½, making a yield of more than 4.55 per cent.

NATIONAL RAILWAYS OF MEXICO.—*Conferences on Indebtedness.*—Conferences between the International Committee of

Bankers of Mexico with Luis Montes de Oca, minister of finance of Mexico, were held in New York last week seeking agreement on the treatment to be accorded the bonded indebtedness of this company, operated by the national government of Mexico, which securities are largely held in foreign countries.

OLD COLONY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $1,250,000 of first mortgage 20-year 4½ per cent bonds, to cover capital expenditures made by the New York, New Haven & Hartford, lessee. It is proposed to sell the bonds to Paine, Webber & Co., at 99.214 and interest.

PENNSYLVANIA.— *Abandonment.* —The Interstate Commerce Commission has denied the application of the Pennsylvania, Ohio & Detroit to abandon its Montgomery branch, extending from Blue Ash, Ohio, to Montgomery, 1.35 miles.

PENNSYLVANIA. — *Acquisition.* — This company and the Western New York & Pennsylvania have applied to the Interstate Commerce Commission for authority to purchase the property of the Sharpsville Railroad, which has a line of 1.9 miles, and to operate freight service over the portion from Wilmington Junction to New Wilmington, Pa., and to dismantle the portion from New Wilmington to Sharpsville.

PENNSYLVANIA.—*Lease of West Jersey & Seashore.*—The Interstate Commerce Commission has authorized the lease by this company of the West Jersey & Seashore for a period of 99 years and the company has announced the effective date of the lease as July 1.

Lease of Western New York & Pennsylvania.—The Interstate Commerce Commission has authorized this company to lease the Western New York & Pennsylvania, which has 567 miles of line extending from various connections with the parent company in the state of Pennsylvania to Buffalo, N. Y., and Rochester.

PITTSBURGH & WEST VIRGINIA.—*Hearing in Acquisition Case Postponed.*—The Interstate Commerce Commission has canceled the hearing set for July 8 on this company's application for authority to acquire control of the Western Maryland, at the request of the P. & W. V. on account of other engagements of counsel.

RICHMOND, FREDERICKSBURG & POTOMAC. —*Proposed Report on Excess Income.*—The Interstate Commerce Commission has made public a 72-page proposed report by Examiners J. V. Walsh and C. H. Johnston, regarding the valuation and excess income for recapture purposes of the Richmond, Fredericksburg & Potomac, recommending a finding that the valuation for rate-making purposes ranged from $27,404,108 in 1920, to $27,945,000 in 1923 and that the company had excess railway operating income for the ten months of 1920 amounting to $160,000, for 1922 amounting to $903,025 and for 1923 amounting to $1,129,368. Under the Supreme Court ruling in the O'Fallon case, the report says, interest may not be imposed, but as the carrier was required to hold one-half of the excess as trustee for the United States it is proposed that the commission require an accounting for interest received on such sums while in possession of the respondent. As the terms of section 15a concerning recapture indicate that prompt action was expected by Congress, the report says, practical application of paragraphs 5 and 6, dealing with recapture, does not necessarily depend upon prior compliance with paragraphs 2 and 3, dealing with the general level of rates intended to yield a fair return. The company had claimed a value of $67,209,210 as of December 31, 1920, and of $62,359,946 as of 1923. The Bureau of Valuation had given estimates of the cost of reproduction new on a yearly basis and on a period basis, as to which the report says that "the two together appear to furnish all required information on the subject of cost of reproduction new necessary to a finding of the value of the property." The cost of reproduction less depreciation on the period basis ranged from $27,643,006 in 1920 to $28,087,056 in 1923.

Dividends Declared

Boston & Providence.—2½ per cent, quarterly, payable July 1 to holders of record June 20.

Carolina, Clinchfield & Ohio.—Common, 1 per cent, quarterly, payable July 10 to holders of record June 30.

Central Railroad of New Jersey.—2 per cent, quarterly, payable August 15 to holders of record August 5; Extra, 2 per cent, payable July 15 to holders of record July 7.

Delaware & Hudson Co.—2½ per cent, quarterly, payable September 20 to holders of record August 28.

Delaware, Lackawanna & Western.—$1.50, quarterly, payable July 21 to holders of record July 5.

International Railways of Central America.—Preferred, 1¾ per cent, payable August 15 to holders of record July 31.

Joliet & Chicago.—1¾ per cent, quarterly, payable July 7 to holders of record June 27.

Norfolk & Western.—Common, 2½ per cent, quarterly, payable September 19 to holders of record August 30; Adjustment Preferred, 1 per cent, quarterly, payable August 19 to holders of record July 31.

Northern Pacific.—1¼ per cent, quarterly, payable August 1 to holders of record July 2.

Pennsylvania.—$1.00, quarterly, payable August 30 to holders of record August 1.

Providence & Worcester.—2½ per cent, quarterly, payable June 30 to holders of record June 11.

Reading Company.—Common, $1.00, quarterly, payable August 14 to holders of record July 17; First Preferred, $.50, quarterly, payable September 11 to holders of record September 18; Second Preferred, $.50, quarterly, payable October 9 to holders of record September 18.

West Jersey & Seashore.—Common Special, 5 per cent, payable July 15 to holders of record June 30.

Average Prices of Stocks and of Bonds

	July 1	Last week	Last year
Average price of 20 representative railway stocks.	112.40	110.33	146.84
Average price of 20 representative railway bonds..	93.65	93.89	89.83

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

Sioux City Terminal	$ 169,741	1918
South Buffalo	$1,754,330	1917

Railway Officers

Executive

Grant Hall, vice-president of the Canadian Pacific, has also been elected president of the Algoma Eastern, effective June 1, 1930, with headquarters at Montreal, Que.

Frank E. Robson, general counsel of the Michigan Central, has been promoted to assistant vice-president, law, of the New York Central, with jurisdiction over the Michigan Central, and with headquarters as before at Detroit, Mich.

Homer E. McGee, who has been elected executive vice-president of the Missouri-Kansas-Texas Lines, with headquarters at St. Louis, Mo., has been connected with the Katy for 30 years—his entire railway experience. He was born at Alvord, Tex., on October 15, 1885, and entered railway service on March 1, 1905, as a station helper on the Katy at Farnham, Tex. Mr. McGee then served at various points in the South Texas district as a telegrapher, cashier and relief agent, and early in 1908 he became a car distributor in the dispatcher's office at Smithville, Tex. From 1910 to 1917 he was advanced successively through the positions of dispatcher, relief chief dispatcher, chief dispatcher and trainmaster at Smithville, and superintendent at Greenville, Tex. During 1917 he was assigned to Waco, Tex., as the American Railway Association representative for Camp McArthur. He returned to the Katy as superintendent in the latter part of 1917, and one month later was transferred to Parsons, Kan., where he remained until June, 1918, when he was transferred to the South Texas district. In August, 1918, Mr.

Homer E. McGee

McGee was promoted to general superintendent, serving in addition as general superintendent of the Houston & Texas Central, now part of the Southern Paci-

fic, for eight months in 1918 and 1919. He was promoted to general manager of the Texas lines of the Katy in 1920 and in 1922 his jurisdiction was increased to cover the entire Katy system, with headquarters at Parsons, Kan. In 1923 his headquarters were removed to Denison, Tex., where he remained until February 1, 1927, when he was elected vice-president and general manager, with headquarters at Dallas, Tex. Mr. McGee's election as executive vice-president became effective on July 1.

Golder Shumate, who was recently appointed to succeed **Archibald Fries** as vice-president in charge of the freight traffic, mail and express and commercial development departments of the Baltimore & Ohio, at Baltimore, Md., as announced in the *Railway Age* of June 21, page 1500, was born on February 1, 1877, at Calverton, Va., and is a graduate of Roanoke College at Salem, Va. Except for a brief period at the start of his railway career, which began in July, 1897, Mr. Shumate's experience has been acquired in the general freight offices of the Baltimore & Ohio. His first position with the company was as clerk in the freight offices at Washington, D. C., which he held until October, 1898. After leaving the service for a few months, he returned to the B. & O. in April, 1899, and the following September became a correspondent in the general freight department. In 1903, he became a rate clerk; two years later he was promoted to chief rate clerk, and, in April, 1912, to chief clerk in the general freight department at Baltimore, Md. His next promotion was to the chief clerkship of the general freight department, January 1, 1913, and on May 1, 1916, he became division freight agent at Youngstown, Ohio, whence he was transferred in similar capacity to Baltimore on November 15, 1916. Mr. Shumate was advanced to assistant general freight agent on March 1, 1917, and to general freight agent at Baltimore in December, 1917. In January, 1920, he was appointed acting freight traffic manager of the B. & O. under the Railroad Administration. On the return of the roads to their owners he became freight traffic manager and in July, 1921, was advanced to general freight traffic manager, in which capacity he has served until his recent appointment as vice-president.

Golder Shumate

Financial, Legal and Accounting

J. C. Cooke has been appointed general auditor of the Norfolk & Western, succeeding **J. M. Rodgers,** deceased. **W. A. Gibbons** has been appointed auditor freight receipts and **W. K. Gibson** will succeed him as auditor station accounts. All will have headquarters at Roanoke, Va.

J. Walter Dohany, general attorney of the Michigan Central, has been promoted to general counsel of that road, with headquarters as before at Detroit, replacing **F. E. Robson,** promoted. **John J. Danhof, Jr.,** assistant general attorney at Detroit has been promoted to general attorney, succeeding Mr. Dohany.

Augustus S. May, treasurer of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., retired on July 1, and **T. F. Paradise,** assistant treasurer, has been appointed treasurer. The careers of the retiring treasurer and his successor have closely paralleled each other, both starting as boys in the treasury department of the road, and each working through successive subordinate positions to become head of the department. Mr. May was born on May 6, 1854, at Bridgeport, Conn., and received his education in the public schools of that city. He has served with the New Haven more than 57 years, commencing his railroad career as cash clerk in November, 1872. From 1876 to 1898 he served as transfer clerk and in the latter year he was appointed cashier. In 1901, he was advanced to assistant treasurer and was appointed treasurer, the position from which he retires, in 1903.

T. F. Paradise

Mr. Paradise, who was born in Stamford, Conn., on June 2, 1862, entered railroad service with the New Haven as office boy in the treasurer's office in New York City, on December 11, 1881. In 1887, the general offices of the railroad company being moved to New Haven, Mr. Paradise went along and worked his way through various clerical capacities until 1903, when he became assistant treasurer.

Operating

L. J. Wilkes has been appointed assistant trainmaster of the Wichita division of the Missouri Pacific at Wichita, Kan.

W. J. Whalen has been appointed trainmaster of the Dubuque division of the Chicago, Milwaukee, St. Paul & Pacific at Dubuque, Iowa, succeeding **C. E. Shaft,** who has been assigned to other duties. **M. J. Skord** has been appointed trainmaster of the Iowa division at Marion, Iowa, succeeding **L. A. Turner,** who has been assigned to other duties.

Frank W. Grace, who has been promoted to general manager of the Missouri-Kansas-Texas Lines, with headquarters at Dallas, Tex., has been in the service of the Katy for nearly 36 years. He was born at Denison, Tex., on February 10, 1880, and gained his first railway experience as a call boy on the Katy at the age of 14 years. Later he served that road as a station helper, seal clerk, brakeman, yardmaster and trainmaster. Mr. Grace was promoted to superintendent at Wichita Falls, Tex., in 1919, and four years later he was transferred to Muskogee, Okla. On February 1, 1927, he was further promoted to general superintendent, with headquarters at Denison, Tex., his appointment as general manager becoming effective on July 1.

Frank W. Grace

Oren W. Page, who has been promoted to superintendent of the Kansas City division of the Atchison, Topeka & Santa Fe with headquarters at Kansas City, Mo., has been engaged in railway work for 31 years. He was born at Ogden, Mich., on December 3, 1880,

and entered railroad service on June 15, 1899, as a fireman on the Chicago & North Western. From 1902 to 1906 he served as a stationary fireman on the Chicago, Rock Island & Pacific, as a locomotive fireman on the Missouri

Oren W. Page

Pacific and as a switchman on the Chicago & Alton. Mr. Page entered Santa Fe service on June 9, 1906, as a switchman, then being promoted to assistant yardmaster in 1912 and to trainmaster in 1915. His further promotion to superintendent of the Kansas City division, from the position of trainmaster of that division, became effective on June 7.

Traffic

J. V. Hackett has been appointed general agent for the Chicago, Springfield & St. Louis at Minneapolis, Minn.

Charles E. Case has been appointed industrial agent of the Chicago & North Western, with headquarters at Chicago, succeeding **George Bonnell,** who retired from active duty on July 1 after 53 years of service with that railroad.

G. W. Callen, traveling freight agent for the Wabash at Milwaukee, Wis., has been promoted to general agent of the freight department at the same point. Mr. Callen succeeds **T. P. Scott,** who at his own request has been relieved of the duties of general agent at Milwaukee and has been appointed special traffic representative in that city.

Omer S. Lewis has been promoted to general freight traffic manager of the Baltimore & Ohio, with headquarters at Baltimore, Md., and **Samuel House,** assistant freight traffic manager, has been appointed to succeed Mr. Lewis as freight traffic manager. Mr. Lewis was born at Lawrenceburg, Ind., on March 8, 1873. He began railroad work as a clerk in the accounting department of the Kentucky Central (now a part of the Louisville & Nashville) at Covington, Ky. From January, 1892, to the following November he was in the accounting department of the Chesapeake & Ohio at Richmond, Va., and in the office of the agent of the same road at Cincinnati, Ohio. Then until 1896 he was in the accounting department of the Ohio & Mississippi (now a part of the Baltimore & Ohio). He next served, successively until 1906, as agent of the Baltimore & Ohio Southwestern at Lawrenceburg, Ind., and as chief clerk to the division freight agent at Vincennes, Ind. From 1906 to 1912 he was in the general freight office of the same road at Cincinnati and then, for a year, he served as division freight agent of the Cincinnati, Hamilton &

Omer S. Lewis

Dayton, at Dayton, Ohio. He then went to the Baltimore & Ohio Southwestern at Cincinnati in the same capacity and, in 1915, was promoted to assistant general agent. The following year he was promoted to general freight agent of the same road and of the B. & O., and in July, 1921, he was

Samuel House

advanced to freight traffic manager, the position he vacates to become general freight traffic manager.

Mr. House is a native of Franklin, Tenn., where he was born September 23, 1884. All of his railroad experience has been in the general offices of the Baltimore & Ohio at Baltimore, where he started in the freight claim department on May 28, 1901, and was successively in the general freight department as rate clerk, chief rate clerk, chief clerk, assistant general freight agent, general freight agent and assistant general freight traffic manager.

Engineering, Maintenance of Way and Signaling

L. B. Porter, assistant signal engineer of the Eastern lines of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Milwaukee, Wis., has been promoted to signal engineer, with headquarters at the same point, succeeding **J. C. Mill,** who retired on July 1. **A. F. Alexander,** signal supervisor at Minneapolis, Minn., has been promoted to assistant signal engineer of the Eastern lines, replacing Mr. Porter.

Purchases and Stores

Effective July 7, the office of the general storekeeper of the Boston & Maine will be transferred from Billerica shops to Boston, Mass. **W. E. Ruston,** assistant general storekeeper at No. Billerica, Mass., has been appointed traveling storekeeper, the position of assistant general storekeeper having been abolished. **J. S. Hayes** has been appointed storekeeper at East Deerfield, Mass., and **D. E. Conway** has been assigned a similar position at Charlestown, Mass., succeeding **W. A. Butler.**

Obituary

W. R. Collins, manager of purchases of the Erie, with headquarters at New York, died at Newark, N. J., on June 28.

Edwin W. Winter, former president of the Northern Pacific and the Brooklyn Rapid Transit, died on June 28, after a brief illness, while on a visit in Fall River, Mass. He was 85 years of age.

WILLIAM R. DAWES, leading banker of Chicago and chairman of the Committee on Protection of Railway Grade Crossings and Highway Intersections of the National Conference on Street and Highway Safety, gave an address on the work and aims of the national conference over the radio on Friday evening, June 20, connections being made to a network of 23 stations scattered from coast to coast.

AIR-RAIL PASSENGER SERVICE has recently been established between Paris (France) and Bucharest (Rumania), according to Commerce Department reports, as a result of an agreement between the Eastern Railway of France and the Compagnie Internationale de Navigation Aërienne. Passengers can now leave Paris at 10 p.m., reaching Strasbourg at 6 a. m. the following morning. Leaving Strasbourg by plane at 6.45, Prague is reached at 10.20 a. m., Vienna at 12.15 p.m., Budapest at 1.45, Belgrade 4.15, and Bucharest at 8.25.